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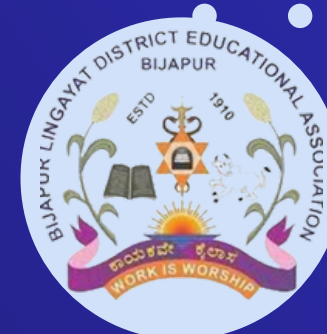
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STUDY OF ARTIFICIAL INTELLIGENCE IN CYBER SECURITY AND THE EMERGING THREAT OF AI-DRIVEN CYBER ATTACKS AND CHALLENGES

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ABSTRACT

The modern world is data-driven. Cybersecurity is essential to prevent data loss. In recent years, cyberattacks have increased in sophistication and frequency. Cybercriminals will inevitably start using AI methods to hide in plain sight online and multiply their harm. Cybersecurity safeguards our digital infrastructure, but the number of potential cyberattacks grows daily. They are immune to standard algorithmic countermeasures. Experts' defensive measures are useless. Because of this, Artificial Intelligence (AI) is being used to protect networks better. AI models need specialized network safety guards and assurance innovations to counteract hostile AI, ensure AI security, and safeguard cooperative learning. We examine the intersection between AI and digital security based on these two vantage points. Today, artificial intelligence is a commonplace occurrence. It reflects the way people think, feel, behave, and learn. It has constructive and destructive applications, such as voice recognition, intelligent robotics, gaming, etc. The use of AI for everyday tasks opens the door to cyberattacks that might compromise the integrity of the work itself or steal sensitive information. Possible solutions to cybersecurity problems using AI are explored, along with some of the dangers that may arise from its use. Also discussed is the possibility of eliminating or at least lessening these dangers.

Keywords: Artificial Intelligence (AI), Cyberattacks, cyber security, cybercrime, hacking,

INTRODUCTION

With the complexity of malware and cyber-arms developing significantly over the last two years, it is evident that only intelligent technology can assist guard against such advanced cyber weapons. The Conficker worm compromised the French Navy's computer network, known as "Ultramar," on January 15, 2009. Due to the inability to make changes to flight schedules, the service has been quarantined, forcing planes at several airbases to return to the ground [1]. The British Ministry of Defense has admitted that some of its most important hardware and software has been compromised. The malware has infected over 800 devices at Sheffield institutions, including hospitals and government buildings. They claimed on February 2, 2009, that the German unified military forces, the Bundeswehr, had hacked over a hundred of their devices. The Greater Manchester Police Information Network preemptively disconnected the Police Central Database for three days in January 2010. In order to conduct routine searches of vehicles and people, staff have to coordinate with specific troops [2]. Network Centric Warfare (NCW) increases the risks of cyber accidents. Hence new approaches to cyber defense are urgently required. New offensive measures, such as the dynamic building of protective perimeters and, integrated crisis management, completely automated responses to assaults in

networks [3], would need the employment of artificial intelligence techniques and knowledge-intensive technologies.

Security experts agree that 2019 had a record-breaking number of events [4]. There was a rise in the sophistication of cyberattacks across the board in 2017 [5]; this included everything from phishing and ransomware to the dark web as a service economy and assaults on civil infrastructure. The increasing trend continued until the year 2020. In the second quarter of 2020, researchers saw an increase of 44 malware attacks per minute or 12 percent. 27 Hackers took advantage of the Covid19 outbreak and people's and businesses' increasing reliance on the internet by exploiting flaws in remote equipment and network bandwidth. As of April 2020, Interpol has logged 907,000 Covid-19-related spam emails.

Additionally, 34% of respondents in the 2020 Remote Workforce Cybersecurity Report reported experiencing a breach themselves due to the transition to telework [6]. Using the high impact and financial reward possibilities, threat actors sent out themed phishing emails pretending to be from government and health authorities to acquire personal data and malware targeting vital infrastructure and healthcare facilities [7]. The push for ubiquitous connection and digitalization will continue to fuel economic growth in 2021. However, it will also 'unavoidably' provide a breeding environment for an increase in the magnitude and number of cyberattacks. The proliferation of ransomware and other forms of cybercrime, the rise of mobile cyber threats, the evolution of phishing techniques, the assaults on the systems that keep our society running, and the efforts of cybercriminals and state-sponsored hackers to seize any new opportunities they can find in the cloud are all contributing factors [8].

A. AI systems' support for cybersecurity

In light of this, businesses have begun using AI in their risk management strategies to better handle the wide variety of cybersecurity threats, technological difficulties, and limited resources they face. Companies are utilizing AI to improve cybersecurity, and the usage of police dogs as an example helps to illustrate why. While police officers rely on the specialized skills of police dogs to track out criminals, security analysts may use AI systems' capabilities to increase their job's efficiency drastically. To this end, the synergistic integration of AI systems and security operators is preferred to the alternative of pitting them against one another [9]. According to research, artificial intelligence (AI) in the cybersecurity market is expected to expand from \$3.92 billion in 2017 to \$34.81 billion in 2025, representing a CAGR (compound annual growth rate) of 31.38% [10]. A recent poll by Capgemini found that the use of AI in cybersecurity solutions is growing at a dizzying rate. From 5% of all organizations in 2019 using such a system, in 2020, that figure is expected to climb to 20% of all companies. Regarding cybersecurity, 73% of the sample tried out AI apps. Network, data, and endpoint protection are often the first uses put to these technologies. The use of artificial intelligence (AI) in cybersecurity may be broken down into three broad categories: detection (51%), prediction (34%), and reaction (18%) [11].

Motivations for using AI in cybersecurity include the following:[12]:

1. Speed of impact: Organizations often feel the effects of large assaults within four minutes. In addition, modern assaults may shift and adapt depending on what their targets are doing; they are no longer limited to ransomware or targeting specific systems

or weaknesses. Such strikes' effects are felt instantly, leaving little time for human connection.

2. 2. Operational complexity: The widespread availability of cloud computing platforms today, and the fact that these platforms can be operationalized to deliver services in the millisecond range, means that you cannot have many humans in that loop and must instead consider a more analytics-driven capability.
3. Cybersecurity skill shortages continue to be an issue: Frost & Sullivan 35 estimates a need for an additional 1.5 million cybersecurity professionals worldwide. Due to the extreme lack of resources, businesses have been accelerating their use of automation technology.

Security teams may benefit from AI in three ways: increased system robustness, quicker reaction times, and more resilience. This approach is referred to as the "3R model" in the study [13]. AI's self-testing and self-healing software may increase a system's resilience or capacity to retain its original presumed stable configuration even while processing erroneous inputs. Artificial intelligence systems may enhance robustness testing by handing over verification and validation to machines. Second, AI may improve system resilience, or the capacity of a system to withstand and recover from an assault, by making it easier to identify threats and outliers. Third, AI may improve system reaction, or a system's ability to respond autonomously to assaults, detect flaws in other machines and use strategy by picking and choosing when and where to launch attacks and counterattacks. Organizations should do a risk-impact analysis when considering whether or not to give AI control over decisionmaking and reaction actions. Artificial intelligence (AI) will often be incorporated into systems that speed up reaction actions and supplement the decisionmaking of human security analysts.

RELATED STUDY

Today's cybercriminals may cause issues for the government, organizations, corporations, and people by using various AI-driven hack tactics. For this level of sophisticated cyberweaponry, the current state of cybersecurity is inadequate [14]. AI-driven cyberattacks are the malicious use of AI to breach digital security [15]. In these attacks, hackers may teach robots to engineer targets with human or even superhuman ability levels socially. Attacks aided by artificial intelligence can modify themselves to fit the host system. By analyzing its surroundings, a system might learn to mimic certain aspects of the internet or exploit its vulnerabilities [16]. Cyberattacks fueled by artificial intelligence are not some distant possibility. The components and infrastructure for an aggressive AI-driven cyberattack currently exist [17]. Recent AI developments have contributed to the explosive development of automation and new ideas. These AI systems may be put to good use in many contexts, but they also present the possibility of being put to wrong use. The use of artificial intelligence in cyberattacks has increased during the last several years. Many businesses still leave their data open to hackers even after moving to more secure technologies like cloud storage services [18]. The overall trend of AI-driven hacks will only increase, and soon, conventional cybersecurity systems will be unable to identify them. The choice between machines and people comes down to efficiency. Cybersecurity teams struggle to keep up because this tendency continues to expand in complexity and scale. However, highly trained cybersecurity experts, essential for effectively

countering this danger, are becoming more scarce and costly. It is possible that these new forms of assault, powered by AI, may have catastrophic results. These covert assaults compromise data security and integrity, which may lead to catastrophic failures [18]. Cyberattacks powered by artificial intelligence (AI) will be quicker, more unexpected, and more sophisticated than anything a human-led cybersecurity team can counter. [19]. Cybersecurity researchers, practitioners, and governments will need to react with increasingly imaginative ways to effectively secure cyberspace from harmful actors as AI becomes a more potent weapon in the hands of bad actors [20]. In order to evade detection by behavioral and signature-based antivirus programs, AI-driven malware use complex obfuscation algorithms and constantly alter recognizable traits [21]. DeepLocker and other examples of malicious AI deployment in seemingly innocuous carrier apps show that AI is being used for malicious purposes. AI-driven cyberattacks, which combine classic cyberattack methods with artificial intelligence to wreak more significant harm in cyberspace while evading detection, are one example of cybercriminals' evolving and adapting attack strategies [22].

Cyberattack methods powered by artificial intelligence will be able to modify their operations based on their immediate context. They may attack the weaknesses through contextual data or information learning or pose as trustworthy system characteristics. Attacks grow increasingly integrated and immune to the host's objectives, surroundings, and countermeasures against cybersecurity defensive systems as time passes [14]. It is possible that these new forms of assault, powered by AI, may have catastrophic results. Because of this, this research looks at the growing danger of AI-driven assaults and discusses the drawbacks of such high-tech cyber warfare.

The White House acknowledges that many federal agencies are also using AI systems, joining the ranks of private corporations and industries that have previously accepted them. Why? Why? Since AI can quickly and efficiently save time and money by scanning standard data formats and thoroughly reading and analyzing large amounts of unstructured data, numerical patterns, and text, it is increasingly being used to supplement human labor in various fields. In reality, AI has the potential to protect both public funds and top-secret information.

Moreover, there exist voids. Hackers are likely attempting to get into the systems using vulnerabilities we are entirely unaware of. It might be years before an organization discovers a data breach [23]. That is too late since the hacker and any private information will be long gone. However, until a hacker gets nasty, AI has to sit back and gather data. For starters, whenever a password is typed or a user signs in, AI looks for irregularities in behavior that hackers are anticipated to demonstrate. Artificial intelligence may pick up on little clues that typically go unnoticed, blocking the hacker's outfit in their tracks. Every tool has its potential misuse, as Varughese pointed out. In the ongoing chess game that is cybersecurity, human hackers will always probe the weak places in any system, AI included. Because it is under human control, artificial intelligence still has a chance of being defeated.

Although AI's ability to connect and interpret data is extraordinary, it is limited by how it was programmed [24]. Programmers must implement new safeguards against hackers who have adapted to AI systems. Artificial intelligence is a powerful tool in the battle to keep sensitive information safe, and the game of cat and mouse will continue. Google developed a graphical data learning model for its Tensor Flow machine learning platform. The Neural Structured

Learning (NSL) open-source framework was implemented on 03/09/2019 and used the Neural Graph Learning technique to train data sets and data structures in neural nets. NSL is compatible with the machine learning stage TensorFlow and is made to work for qualified and incompetent machine learning professionals. Models for machine vision can be rendered in NSL, natural language processing (NLP) can be carried out, and interactive databases like medical records and data visualizations may be used to perform projections in NSL [25].

The area of artificial intelligence (AI) is quickly becoming a focal point for the computer security industry. We will examine how institutions, cybercriminals, and regular people are affected by AI and how security measures for the technology have progressed. Let us figure it out together. Automated information protection methods greatly enhance the internet's security. Numerous rapidly expanding businesses, like yours, likely use multiple layers of security, including those at the border, network, edge, device, and storage levels. Two examples are firewall rules (either hardware or software) and network security systems (which monitor and, among other things, establish which connected devices are permitted and avoid others). If bad actors circumvent these safeguards, they will be responsible for finding and implementing countermeasures against viruses and malware. Then they would have to deal with solutions like IDS and IPS.[26]

In addition to their research "Reinventing Cyber Protection with AI," which demonstrates the need to establish cybersecurity defenses using AI, the Capgemini Research Institute also looked at the state of information security. The poll found that 850 data security executives, IT information management, and IT operations professionals from 10 countries all agreed that AI-enabled solutions are crucial in the face of rising cyber-attacks. Some other highlights of the research include that 75% of respondents to the survey found that AI helped their company react faster to security breaches. Sixty-nine percent of businesses acknowledge the need for AI. [27] Three out of every five businesses believe that artificial intelligence improves the accuracy and productivity of cyber analysts. Artificial intelligence has the potential to not only improve the outlooks of current cybersecurity solutions but also to reconstruct the method by which new solutions are developed.

Using AI for cyber defense creates new vulnerabilities in physical security. Cybercriminals may leverage AI tools for progressive behavior assaults, making it just as critical to use AI technology to identify and counter malware threats. This is partly due to the decreasing costs of creating and deploying cutting-edge AI technologies, such as generative adversarial networks and deep reinforcement learning, which facilitate more access to these methods [28]. Cybercriminals can develop more complex and efficient harmful programs at a lower cost and shorter time. Because of all the many factors, users are vulnerable to cyber-attacks.

CURRENT AND EMERGING AI-DRIVEN CYBERATTACK TECHNIQUES

New methods and improved cyberattack tools are increasing the cyberattack arena and making cyberspace vulnerable to various destructive cyberweapons [29]. By inserting specific theoretical ideas into the digital, physical, and political security domains, Brundage et al. [30] created a scenario that alerts cybersecurity researchers and the industry to the malicious exploitation of AI. Researchers have shown the possibility of automated exploit creation in cutting-edge programs and have developed a few fundamental principles in this direction. Cybercriminals use fuzzy models to create advanced malware that can adapt to its

surroundings, release new versions regularly, and infect systems without raising suspicion. Bad guys may use these ideas to launch a new generation of stealthy, high-tech cyber weapons.

A. AI-Driven Attacks in the Reconnaissance Stage of the Cybersecurity Kill Chain

The typical behavior and operations of a cybersecurity defensive mechanism, computer infrastructures, and devices may be studied using AI approaches [29]. If a bad actor can collect enough information about the user's devices, network flows, and architecture, they may establish a crucial connection with their intended targets. Artificial intelligence has the potential to be used by malicious actors to identify patterns of targeted assaults in large data sets. Reconnaissance attacks, which may also be categorized as AI-targeted attacks, need careful preparation before they can be launched successfully. In order to offer in-depth analysis and to design focused exploration procedures, AI may be used to overcome human constraints via its capacity to understand, uncover, and recognize patterns in enormous volumes of information [29]. The authors identified four AI-driven threat use cases as part of the reconnaissance phase of AI-targeted attacks. "These include intelligent target profiling, clever vulnerability detection/intelligent malware, intelligent collection/automated learn behavior, and intelligent vulnerability/outcome prediction."

Intelligent Target Profiling

The capacity to profile ICT users has already been proven to be affected by advances in AI. Bilal et al. [31] introduced a classification system for profiling methods and the corresponding artificial intelligence (AI) algorithms. The authors noted that there are two types of profiling—individual and group—and that the most popular artificial intelligence (AI) are fuzzy logic ontology, machine learning, and convolutional neural networks. Targets of cyberattacks may now be profiled in detail by analyzing their public social media profiles and online behavior, thanks to the development of AI methods. Groups may be able to target the appropriate message at the right moment with the help of AI technologies. Artificial intelligence (AI) technology may help bad actors enhance their chances of creating accurate profiles of their intended victims. Bad actors may use both DNNs and NNs for target profiling and classification. Evidence from research prototypes like SNAP R suggests a high probability of harmful end applications and a somewhat mature technological landscape for implementing intelligent profiling.

Intelligent Collection

Gathering information is similar to reconnaissance and is used to better plan and develop cyberattack policies. Such an assault uses artificial intelligence tools like natural language processing and deep neural networks. Due to their ability to automatically gather generic data on many assaults and variables that impact risk, these studies may be used for more than one purpose (both defensive and offensive) [32].

Intelligent Malware

Clever malware, by infecting environmental control systems, "may begin indirect cyber weaponries that masquerade to be unintended failures on computer infrastructure [33]. One sort of spear phishing that is more popular is the end-to-end kind, in which the bad guys do everything from finding their targets to sending them tailored, machine-generated messages.

Outcome Prediction

Artificial intelligence methods can look at what has happened in the past and now to make predictions about what will happen in the future. Improving AI prediction models may need new approaches to cyber-related assessment and simulation development. Offensive AI has the potential to provide hackers a boost of confidence to go after high-risk, high-reward targets to outwit cutting-edge cybersecurity solutions.

B. AI-Driven Attacks in the Access and Penetration Stage of the Cybersecurity Kill Chain

The next stage of a cyberattack is sometimes called an AI-aided assault. This investigation discovered six (6) access and penetration phase AI-driven assaults. These are examples of intelligent captcha/manipulation, clever aberrant behavior creation, brilliant AI model manipulation, and innovative fake review generation.

Automated Payload Generation/Phishing

Bahnsen et al. shown in DeepPhish: Simulating Malicious AI that bad actors may use machine learning algorithms as a weapon to bolster phishing attempts and render them undetectable by cybersecurity detection systems. DeepPhish is an artificial intelligence program that synthesizes new phishing URLs by learning patterns from the most successful phishing URLs in the past. The goal is to develop more sophisticated phishing URLs to evade AI detection and facilitate more efficient phishing attempts. In the past, attackers used randomly generated segments to construct phishing URLs. The authors proved the efficacy of phishing assaults by boosting the efficiency and success rate of these attacks by using an LSTM model to classify phishing URLs and generate new, successful synthetic phishing URLs. According to the authors, increasing the attack's success rate from 0.69% to 20.9% and from 4.91% to 36.28% was achieved via training DeepPhish on two distinct threat actors.

AI-Driven Password Guessing/Password Cracking

It was determined that there are three distinct kinds of password assaults powered by AI. These include the brute-force attack, the guessing attack, and the stealing attack. Haj et al. [34] suggested a deep learning model guess passwords. By studying the frequency of password breaches, the scientists refined a GAN-based automated password-guessing approach. Rule-based techniques include setting and generating rules for various password modifications like concatenation. In contrast, dictionary attacks involve utilizing a list of plausible terms and past password breaches in the hopes of successfully guessing.

Hitaj et al. [34] developed a technique for effectively training a GAN, allowing the generation of individually crafted samples from the training data. Passwords may be generated automatically by using GAN in the following ways: The GAN consists of two concatenated DNNs, one for generation (G) and one for classification (D) (D). Password samples, a trove of compromised credentials, are also available in a training dataset. The generator G, which stands for a random probability distribution and produces a series of vectors called false password samples, was trained using a noise vector. Discriminator D is trained to distinguish between actual and fake data by being fed both. G forces D to provide him with information to determine how accurately password leaks were first dispersed. PassGAN was trained using the RockYou dataset, a widely used password database, and it successfully guessed fresh, unique passwords and reproduced the RockYou dataset's distribution. Out of the 43,354,871 unique passwords

stolen from LinkedIn, PassGAN successfully matched 10,478,322 (24.2%). Despite never having seen any LinkedIn information, GAN generated secure, memorable passwords from the RockYou words. When used in tandem with HashCat, PassGAN improved password prediction accuracy by 51%-73% over HashCat alone.

K-Nearest Neighbors (KNN), logistic regression (LR), decision tree (DT), linear support vector classifier (SVC), random forest (RF), support vector machine (SVM), gradient boosting regression tree (GBRT), and multilayer perceptron models were implemented by Lee and Yim [34] to classify data obtained from key presses. When it came to intercepting keystrokes, the ultimately deployed model was 96.2% accurate. This implies that real-world thieves may employ AI methods to acquire consumers' actual keyboard data. To create new candidate passwords with a similar pattern to previous passwords [35], Trieu and Yang [36] used Torch-run, an open-source machine learning approach.

Intelligent Captcha Attack and Manipulation

Using cycle-GAN, Li et al. [37] trained Captcha synthesizers to generate many phony examples for text-based Captchas. The fabricated data set was used to educate convolutional recurrent neural network-based basic recognizers. After that, the basic recognizer is fine-tuned with the use of a transfer learning method and a few labeled examples of real-world Captcha. Amazon (86.4 percent), Apple (0.877 percent), Sina (0.85 percent), Baidu (0.807 percent), Weibo (0.798 percent), eBay (0.743 percent), and Sogou (0.717 percent) are just a few of the famous sites whose Captchas were successfully bypassed using this method; Microsoft's two-layer approach had a success rate of 0.224, suggesting the attack is pervasive. The results show that using a combination of anti-recognition methods is possible to boost captcha security, although only by a small margin.

With deep learning, Gao et al. [38] could decipher text-based Captchas and develop their image-based alternatives. Four CNN models with 2, 3, 5, and 6 convolutional layers were used as recognition engines. The authors were able to break through the Roman-character-based Captchas used by the top 50 websites in the world and three Chinese Captchas that employ a more extensive character set, with success rates ranging from 0.10 to 0.90. This assault is proceeding at a rate that is, on average, far quicker than any previous ones. This aggressive AI approach can penetrate other current Captchas since its concentrated tactics encompass practically all known resistance measures. Using a GAN-based method, Ye et al. [39] created a tool to decipher textual Captchas. To do this, we first used a Captcha synthesizer, which automatically creates synthetic captchas, to develop a base solution. Then we used transfer learning to fine-tune the base solver on a small subset of genuine Captchas. The authors tested the model's performance with 33 distinct Captcha schemes, including 11 now used by 32 top 50 most visited websites. The authors proved the superiority of their approach by deciphering cutting-edge Captchas in less than 0.05 seconds. When bypassing Microsoft's two-layer Captcha, Gao et al. [38] offered a simple yet successful AI-driven approach. As the core of their recognition system, the authors trained an enhanced version of the revolutionary CNN model LeNet-5. On a regular desktop computer with a 3.3 GHz Intel Core i3 CPU, the implemented model had an average success rate of 44.6% and a speed of 9.05 seconds.

Smart Fake Review Generation

Yao et al. [40] developed a two-stage method for generating and personalizing reviews that can fool statistical detectors. The authors deployed an RNN-based fake review generator that can provide deceptive but plausible evaluations of eateries on the Yelp app. The high standard of these evaluations demonstrates the difficulties in spotting this kind of assault.

AI-Model Manipulation

Using adversarial approaches, bad actors may intentionally modify the data of machine learning models to make them inaccurate. Attackers may trick spam filters' categorization model by inserting a spoofed input set or changing the wording of spam emails. By manipulating the input and training data, cybercriminals may exploit the Naive Bayes (NB) model used for spam mail screening. Deep model poisoning attacks on federated learning were studied in depth by Zhou et al. [41]. In order to increase the durability, efficiency, and resilience of poisoning assaults, the authors injected rogue neurons into the redundant network space, using the regularization term in the goal function. Adversarial examples are samples that have been modified on purpose to fool DNN models. Adversarial examples are constructed with little alterations, yet they mislead DNN models into making inaccurate predictions.

C. AI-Driven Attacks in the Delivery Stage of the Cybersecurity Kill Chain Intelligent Concealment and Evasive Malware

Using LSTM, Bahnsen et al. [42] created complex phishing URLs that evaded the most advanced cybersecurity detection systems. Hu and Tan [43] suggested a GAN approach that may generate undetectable adversarial malware to avoid detection by machine-learning black-box systems. Using a GAN, Anderson, Woodbridge, and Filar [44] suggested an autonomous malware URL generator that learns to evade detection by DNNs. The result demonstrates that domains created by the implemented GAN model are immune to detection by DNNs and GAN malware scanners. A random forest classifier that uses characteristics that have to be created by hand was also readily defeated. The sophisticated evasive malware presented by Kirat, Jang, and Stoecklin [45] may conceal its harmful payload assault in video conferencing apps without being seen by the user or the application's security measures. They used DNNs to hide their malicious intent and only activated them on specific targets.

CHALLENGES

Plans for future research, manufacturing, and deploying an AI approach to cybersecurity should clearly distinguish between short-term goals and long-term visions. It is possible to apply several AI methods to cybersecurity rapidly, yet pressing cybersecurity problems need more innovative solutions that are now in use. At this point, we have just discussed the currently available instant applications. It would be fascinating to see novel notions of information processing applied to managing future conditions and decision-making. It is a challenging technological sector to handle knowledge for networked central warfare. Only with fully automated information management can leaders and policymakers gain a commanding advantage at all times. This article provides a synopsis of the present command and control system of the Bundeswehr, including its centralized and decentralized information models. Considering the long-term future, we probably should not depend only on Narrow AI for the next several decades. Some may be tempted to believe that by the middle of the 20th century, we will have achieved the primary aim of AI, which is to create artificial cognition in the form

of an AGI. The first AGI conference was held at the University of Memphis in 2008. The Singularity Institute for Artificial Intelligence (SIAI), founded in 2000, warns that robots' rapidly expanding intelligence poses a potential threat. Singularity, described as "the technological progression of cognition that is wiser than a person," is possible at this point. There is a lot of breakthroughs that are often mentioned as potential ways ahead. While AI is now the most talked about, many other advances also pave the way for the creation of intelligent intelligence, so long as they surpass a specific complexity barrier.

IMPACT OF AI-DRIVEN CYBERATTACKS

New AI-powered hacks have the potential to cause severe damage and even loss of life. Highly sophisticated and covert assaults will destroy faith in companies and could lead to systemic failures by eroding data confidentiality and integrity. Think of a doctor or expert delivering a diagnosis based on manipulated medical records or a drilling rig looking for oil in the incorrect place because of faulty geo-prospecting data. Due to AI's ability to learn and adapt, we are now living in an age when assaults may be launched in large numbers while being precise and mimicking human behavior. An attacking AI that learns from its environment will be sophisticated enough to infiltrate systems with minimal risk of being detected [46]. PassGAN is an example of an artificial intelligence-driven attack that can generate many effective password guesses, which may then be used to get past current cybersecurity authentication systems and do further harm.

CONCLUSION

Cybercriminals emphasize the use of AI-driven approaches in the attack process, and this emphasis is ever-evolving and improving. This research delves into the AI's offensive capabilities, which provide attackers the means to launch strikes on a grander scale, with more reach, and at a quicker rate. In order to assess the harmful effects of AI-driven cyberattacks, this research analyzed the available literature on the topic.

Researchers, policymakers, and industry professionals are urged to use AI to defend themselves against malicious AI and to develop cutting-edge defenses against AI-driven cyberattacks. In order to stop AI-driven assaults in the future, a reliable AI framework will be created to help explain critical elements that affect the detection logic.

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IMPROVEMENT AND AESTHETIC ENGAGEMENT FOR HUMAN-COMPUTER INTERACTION RESEARCH

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ABSTRACT

Human-computer interaction (HCI) is a cutting-edge technology that enables ubiquitous and self-sufficient service broadcasting in interpersonal interactions. Person-computer interaction (HCI) merges with computer vision methods for human recognition and object categorization in autonomous communication settings. Human-computer interaction (HCI) designers are tasked with creating systems that reduce the gap between the human user's mental picture of what they want to achieve and the computer's ability to do those tasks. As the number of people who regularly use computers grows, so does the importance of the role computers and information technologies play in a broad range of companies, leading to a greater reliance on various computer-based information systems.

The new generations of computer interfaces will have to overcome the same fundamental organizational, societal, and technological issues and challenges that will impact the effective use and efficient design of human-computer interactions that will be presented to us by the technologies of the twenty-first century.

Keywords: Computer vision; Deep belief networks; Human-computer interaction; Interaction behavior; Multimodal processing

INTRODUCTION

Human-computer interaction (HCI) refers to a set of technologies that enable two-way communication and the exchange of information between mobile people and distant computers. Human-computer interaction (HCI) is used to facilitate communication between people and the exchange of data [1]. The prediction technique helps analyze the data system process, producing a decision-making system at a faraway place. One or more network operators establish a uniform, well-defined internet policy known as an autonomous system (AS) [2], a collection of IPv4 and IPv6 prefixes under the control of a single administrative authority or domain. In the past, it was thought that a single entity, often an ISP or a large, independently formed company with multi-network connections that conform to a specified routing policy, was all that was required to ensure proper operation. Many cases may be hosted by an ISP, but only one will be visible to the Internet due to the ISP's routing policy.

The desired user's productivity and communication efficacy may be improved by using the prediction approach by matching data from before and after [3]. A decision is made at a particular moment to determine whether or not specific information is reliable. The HCI and user interaction are computed using various methods, reducing the number of mistakes made [4]. In most cases, the HCI is used to connect users and exchange data about their security.

Engineering, cognitive science, and computer science [5, 6] are only a few of the areas that contribute to HCI's development.

AI technology, known as computer vision (CV), uses computers to interpret and respond to images. CV's purpose is object recognition based on obtained input and output to the user [7]. This detection is carried out using previously established information, and the processing is carried out in response to a user query to identify the item or picture. It is measured against a sample of data used for instruction. The user creates the analysis and results. As a result, HCI takes advantage of CV, where the detection processing is optimized. When detection is requested, the CV analyzes the data by categorizing the item and considering the HCI's input. When a user requests, three distinct sorts of processing are triggered. The interaction is supplied through HCI, communication is formed between the sender and receiver, and then the integration of requests and replies is generated. CV identifies the user so that the computer and user may effectively communicate from afar [8].

Human-computer interaction (HCI) optimization is used to facilitate productive and trustworthy data collection from users by facilitating effective communication between users and systems. To get the best results in object detection and interaction, CV-based HCI (CV-HCI) uses optimization. As a result, the assessment is conducted in a specified time frame, and the HCI quality is improved using different methodologies. Therefore, CV offers object identification from that HCI to provide information to the enquiring user. Processing is improved in this way. In order to deliver the best data for processing in HCI, it is essential to do periodic monitoring of the collected data. Optimization is carried through using many methods of efficient computing.

A. The need for HCI

Dix et al. [9] argue that while creating computers and other similar devices, designers must remember that users have specific goals and wish to integrate them into their workflow as naturally as possible. The designers of these technologies must be able to put themselves in the shoes of their end users and understand the problems they will face before they can create a workable solution. Creating an executable system is crucial, but making the computer interface intuitive, simple, and time-saving is even more critical. Even if it is safe to assume that all designers are also users, it is unclear why anybody would bother teaching them how to design since they already have a decent sense of what a user-friendly interface should look like. Since the user interface is such a critical component that determines the efficacy and quality of usage and communication between the user and the virtual environment [10], Dix et al. [9] state that building a consistent and robust user interface is not a simple effort and takes substantial expertise.

Further, the user interface is not an afterthought and must be planned and developed along with the rest of the system. In other words, it should facilitate the activities people genuinely desire to engage in. Peak [11], Greenberg [12], and other researchers [13] all acknowledged the relevance of HCI in their respective studies. It recommended that it be taught to provide professionals in the field with the skills they need to do their jobs.

Several academics, including Fetaji et al. [14], Tufte [15], Corso [16], Preece [17], and Faconti [18], identified this as a means of interaction between humans and machines in a study by Fetaji

et al. [14]. Human-computer interaction, in Tufte's opinion (p. 19), is the result of two competent information processors (human and machine) trying to exchange data over a limited and cumbersome channel. However, Corso [16] defines HCI as two-way communication between humans and machines, noting that today's interfaces are equipped with computer vision, voice and audio processing, and sensors that hold great potential for facilitating more human-like interactions between humans and machines. In contrast, Preece [17] agrees with Corso[16] that virtual worlds and virtual realities generally provide a sensation of direct physical presence, sensory clues in three dimensions, and a natural form of interaction. HCI, as suggested by Faconti [18], suggests that the new interfaces of many application systems that began to integrate numerous devices used together began to enhance communication.

In contrast, HCI is defined as a branch of science, design science, and engineering by researchers like Newell and Card [19], Carroll and Campbell [20], and Long and Dowell [21] in a study by Fetaji et al. [14]. According to Newell and Card [19], HCI is a "science as tempered by approximation" that equips designers with engineering-style ideas and techniques. However, Carroll and Campbell (32) describe HCI as a field of design science that uses a craft-based approach and novel research technique to assess systems in their intended and tasks environment, with the findings informing designers of subsequent generations of systems. Human-Computer Interaction (HCI) is a subfield of engineering described by Long and Dowell [21] as the study of how people and machines work together to get things done, with further analysis breaking down HCI into two subfields: HCI for people and HCI for machines. All three definitions come from the same study by Fetaji et al. 3, which examines how people engage with computer technology and how these technologies might be made more user-friendly, practical, and intuitive.

RELATED WORKS

Several research projects by various authors are discussed here. As a means of deploying two forms of joint attention based on spatial segmentation and temporal localization, Huang et al. [22] created a hierarchical conditional random field. They suggested using an eye-tracking camera to keep tabs on people's collective focus while an iterative optimization process filtered out distracting extraneous information.

Fang et al. [23] combined convolutional neural networks (CNN) with deep convolution networks to recognize human gestures. The data was analyzed using an expression recognition method that derives gesture categorization. The team's main goal was to lessen the amount of ambient noise and light fluctuations.

In their discussion [24], the authors noted that the least-squares method is used in a rotating fashion depending on the response component in inexpensive multivariate curve resolution. Using this information, we can quickly address and optimize the response factor. The CV uses second-order data processing to investigate chemical/external pretreatment in this case.

Based on LSTM, a new method of connectionist temporal classification using bidirectional and convolutional LSTM was created. It demonstrates an improved categorization strategy in terms of accuracy. Extraction and recognition in [25] are based on analyzing handwriting gestures.

To solve this interactive problem, Dometios et al. [26] designed a coordinate change dynamic movement primitive. In this study, we evaluate user-adaptive online robot mobility by

implementing a leader-follower structure with detailed monitoring and provision of all activities.

A median compound local binary pattern (MDCLBP) analysis was done via an oriented gradient histogram to improve system performance. In [27], the texture-based information for analyzing the robot's engagement with the end-user or user-to-user communication is fetched using sign and magnitude.

To improve gesture detection and facial expression identification, [28] proposes a video semantic feature-learning technique. In this work, we develop two methods for analyzing images' features: a distance-weighted approach and a k-nearest-neighbor technique. As a result, the video's picture characteristics are extracted to improve its discriminability.

An interaction model based on multinomial kernel logistic regression with group-of-features relevance is proposed in [29]. In this study, gradient descent was slowed down in areas where it could identify distinct HCI deployment phases. All input weights were used to conduct the analysis, which was then compared to the datasets, and the findings were delivered.

[30] shows a ray-tracing expression detector based on HCI feature point placement. Calculations were made to determine where two eyes met on a person's face. This feature's point extraction was conceived by tracking the eyes' spatial motions.

Using gesture recognition for interaction analysis, Li [31] demonstrated a robot arm powered by a 3D solid-state motor. We employed a work-matching algorithm to locate gestures by comparing them to the target gesture and the motions that came before them. Discrete wavelet transform and HCI based on interaction modes were employed in this calculation to recognize the gestural changes.

Zhou et al. [32] established a muscle computer interface when analyzing hand motions in real-time. Hierarchical k-medoids, a three-tiered structure, combine electromyography signals with depth vision. Accuracy was enhanced as the study established the cluster characteristics.

An efficient HCI has been designed using 2D-CNN, in which the region of interest (ROI) is retrieved to identify the hand area by carrying out two different sorts of predictions. This study uses a cascade classifier to handle the enlarged picture frame for ROI extraction.

Using matching, the authors of [33] employ prediction learning to pinpoint a specific hand area. In [21], the author uses a Support vector machine (SVM) to identify the gesture across a three-dimensional space. In order to infer depth information from the motions, this technique makes use of a multimodal sensor. The SVM uses this wealth of data to identify the gesture in real-time software.

Using support vector machines (SVMs), researchers [34] were able to identify 3D-based human interaction recognition and enhance salient activities. In this case, the kinetic sensor's gesture was extracted using hierarchical spatial-temporal saliency to pick up on the first swayings. The primary goal of this study was to raise the bar for how well it recognizes things.

The most effective therapy for diabetic retinopathy (DR..) is an early diagnosis by regular screening, which is critical for a better prognosis [35]. The ability to automatically scan images will aid physicians in making a speedy and accurate diagnosis. Imaging technology is beneficial for analyzing retinal fundus pictures in this scenario. In this post, we will go through the three key steps necessary to create an automated DR..detection model: (a) picture

preprocessing, (b) blood vessel segmentation, and (c) classification. There are two stages in the preprocessing phase: the RGB to Lab conversion and the enhanced contrast.

In recent years, total hip arthroplasty (THP) [36] has evolved into a very effective pain-relieving and performance-enhancing surgical technique. The primary goal of this work is to design and evaluate a deep learning synergist (SDL) for THP that can analyze and predict many parameters, including length of stay, cost of a stay, and the likelihood of discharge. Even more so, there is uncertainty in making forecasts. The PSP model has been enhanced by the fine-tuning of all patient cohorts. Concerning learning, confidence, acceptability, and validity, the proposed SDL paradigm fared better. The provided methodology may be used to implement PSP for tiered payments [37]; however, this will depend on the specifics of each scenario.

AESTHETICS AND HCI

There is a slew of new conferences and workshops looking at the ramifications of computing's permeation into our daily lives from many angles. Aesthetics, emotion, enjoyment, experience, expressiveness, and similar concepts are becoming more commonplace in HCI discussions. Regarding interactive technology, aesthetics are starting to be seen as a significant concern. Aesthetics is a broad word often employed in conjunction with other concepts. Here we offer the definition and the true meaning of the term. The Oxford English Dictionary defines aesthetics as the science that examines the circumstances of sensual perception" and "ii) the philosophy or theory of taste, or the experience of the beautiful in nature and art" (both at p. 338). "Ask contemporary aestheticians what they do, however, and they are likely to respond that aesthetics is the philosophical analysis of the beliefs, concepts, and theories implicit in the creation, experience, interpretation, or critique of art," KellyKelly states [38], writes in the introduction to *Encyclopaedia of Aesthetics*, one of the most comprehensive references on the subject [38]. However, it is hard to pin down precisely what it is about. It also notes that contemporary aesthetics' primary goal may be self-definition.

A. Artifact Design

Industrial designers, communication designers, and the newly minted interaction designers have taken on more prominent roles in creating novel artifacts to address a wide range of problems and opportunities since the shift from a narrow focus on work to a broader view of interaction [40]. The aesthetics of future information appliances might be improved by considering user preferences [39]. Combining ideas from work and play is one-way digital technologies may be used in the real world. The fact that these devices can serve as both an emulator and a source of information frequently results in a fresh aesthetic appreciation [40]. Artists often build these gadgets and exhibit them as interactive or digital works of art in museums and galleries.

Evaluation of Artifacts.

The aesthetic value of these many computer devices and artifacts is a problem, not just throughout the design process. "The display should be appealing when positioned in the appropriate location," the authors of [35] write after surveying the heuristic Evaluation match between the design of ambient display and settings.

Ubiquitous Computing.

It is now clear that the personal computer is just one of many potential ways we may design how people interact with computers, thanks to developments in fields like ubiquitous computing, augmented reality, and physical computing. These gadgets, whether housed in private homes, museums, or shown in public spaces, need careful design to ensure they take into account the aesthetic, emotional, and aspirational elements of their surroundings. Ambient displays, for instance, should attract attention due to shifts in the information they offer rather than the way their aesthetic stands out [41].

B. System Design

We refer to developing hardware and software as "system design." The hedonic quality heavily influences users' evaluations of appeal. Thus it is essential to keep it in mind while building software. The authors of [42] gave a novel method for developing 3D sketching tools. Where originality and freshness are valued most, Those in the creative and technological fields work closely together.

C. Attractiveness and Look and Feel of UI

Many publications have discussed the importance of aesthetics regarding the design and presentation of online spaces. As the aesthetics of a user interface become increasingly valued and the appropriate tools become accessible to interface designers, the trend towards more visually pleasant interfaces will continue. While [43] provides a theoretical framework for evaluating a site's aesthetic appeal, [44] recognizes the importance of aesthetics when ranking websites. The importance of aesthetic considerations in a product's or system's success, beyond utility and conventional usability, is becoming more widely acknowledged.

D. Interacting with a System

Rather than being two distinct ideas, aesthetics and interactivity are inextricably bound [26]. In the aesthetics of interaction, the focus switches from controlling the look to controlling the interaction, of which appearance is a component. As the aesthetics of interaction come into play, the emphasis shifts from usability to pleasure.

Mixed Reality and Virtual Reality.

Aesthetics play a significant role in the design of mixed reality or virtual reality devices, which are, in turn, influenced by a wide range of contextual needs. The artistic association of projecting a virtual desert into a curtain of water was considered, and "the curtain rain was chosen for its aesthetic qualities, both in terms of its striking visual image and sound, its asymmetric transparency, and not least, due to the artistic association of virtual reality."

Interactive Art.

"interactive art" refers to a new kind of creative work that relies heavily on technological and user input. Examples of such works are the computational composite [45] and the computational textile kit [46], which include user engagement in novel ways and illustrate multidisciplinary cooperation across research, design, craft, and art. The document's writers propose a methodology created to facilitate the construction of novel interactive technologies.

E. Usability and User Experience

Researchers in human-computer interaction (HCI) do not always welcome aesthetics. According to [47], many experts even see it negatively correlated with usability. The influence of usability vs. aesthetics in HCI has been the subject of ongoing discussion. However, in recent decades, several studies have explored the beneficial effects of beauty. Currently, there is empirical evidence linking the aesthetic quality of a system's user interface to user pleasure [48], which has suggested that aesthetic design may have a more significant impact on user preference than conventional usability [25]. While usability is crucial, an aesthetically pleasing design may sometimes compensate for usability issues. A system's evaluation depends on both its instrumental and non-instrumental aspects, which is why usability and user experience are so closely linked.

F. HCI Research Methods

HCI has developed into a research area focused on designing, developing, and implementing novel information and interaction technology forms. The pragmatic perspective, which considers matters like creativity, craft, and aesthetics, is one of three viewpoints identified about the design theory. The others are the conservative account and the romantic account. Historically, the practices of artists and designers have been heavily influential in the field of human-computer interaction (HCI). As a result, new approaches have emerged in HCI, such as cultural probes, to motivate the development of suitable, enjoyable, and even controversial designs.

THE KEY ISSUES AND CHALLENGES IN HUMAN-COMPUTER INTERACTION

I. Technical Issues

The rapid development of ICT, including mobile technologies, presents additional issues for developing nations. In order to offer customers sophisticated computing services and resources, mobile computing devices like palmtop computers, Personal Digital Assistants (PAD), and mobile devices have difficulty in common with one another: tiny interfaces. Huang [22] argues that the smaller screens of mobile devices make it harder to convey information effectively and guide people to the specific content they seek. Furthermore, power consumption is a primary concern for designers since mobile devices have to function on a limited battery charge. As a result, HCI experts and designers must work hard to create interactive mobile devices that are intuitive, productive, and fun to use. [22].

1. Hardware Challenges

The interface design for mobile devices is more complex. It has more obstacles than regular-sized equipment like desktop phones and printers due to screen size and weight limits for mobility considerations. Among these difficulties are Input constraints, output constraints, and a focus on mobility in design.

- Limited input facilities

Due to the smaller screen size of mobile devices, researchers show that smaller keyboards (an example of an input facility) can be quite tricky and complicated to use compared to the full-blown human-computer interface, especially for users with poor manual dexterity or fat fingers

and those who have difficulty selecting tiny buttons on mobile devices. Huang, however, [22] claims that diverse lines of inquiry into the problem have yielded a wide range of potential responses.

- a. Reduce the footprint of a full-sized QWERTY keyboard by four rows using a customized keyboard stick.
 - b. The novel One-key keyboard considers social acceptability, input, speed, and learnability by lowering the fundamental pitch to overcome this difficulty.
 - c. Stylus and touch screen interaction.
 - d. A scroll wheel functions as a push button for performing a particular action and a direction button for navigating the mobile menu, allowing the user to do many actions with a single hand.
- Limited output facilities

Muhanna [49] and Huang's [22] research suggests that developing the screen of mobile devices (the most widely used output facility) for display is the most pressing issue that calls for experimental investigation into the range of possible screen sizes.

- Designing for Mobility

The power management of mobile devices, which not only takes into account energy savings for the processor but also optimizes energy savings for other devices like the display, keyboard, and memory, is an essential factor to consider when designing a mobile device to prove its portability and ease of being held [50]. As a result, it is crucial to provide a power management unit that gathers data in hardware to ensure that the device's performance and portability are not compromised.

2. Software Challenges

Due to their limited display size, mobile devices provide unique difficulties for HCI designers [22]. The researcher Huang [22] enumerated several obstacles, including:

- a. If the inputs and outputs of translating a desktop design to a mobile device are not understood, the resulting interaction design may be inefficient. This is where hierarchical menus come in handy; clicking on one item sends the user to a sub-menu, and so on.
- b. Because of their tiny screens, mobile devices make it difficult for users to navigate and browse. However, a new interface called roller aims to solve this problem by supplying users with rich contextual information to aid their navigational endeavors.
- c. Due to their limited resources and screen size, mobile devices have trouble downscaling huge pictures and icons; as a result, it is recommended to employ vector graphics to enable suitable and resource-saving solutions.

While new technologies are being developed, technical difficulties will arise, and HCI designs, whether for mobile devices or computer-based applications, will get more complex. Therefore, Curran and King [51] argued that in order to build user-friendly HCI systems, HCI designers should interact with consumers frequently.

II. Design and Implementation Issues

Myers [52] argues that a system's or an app's success increasingly depends on how well its user interface functions. Furthermore, he said improper system interface and implementation have been responsible for many calamities. Focusing on HCI challenges and issues in this paper is vital to avoid or minimize the possibility of the same disasters and faults during HCI design and implementation. Myers [52] suggests that the difficulty in designing and implementing human-computer interfaces contributes to the failure of HCI. Thus, he explained why and he explained how to fix the problem.

♣ The difficulty in knowing tasks and users

The designers and developers of a system can never know every possible scenario in which it will be used. Additionally, these individuals have difficulty naturally seeing themselves in consumers' shoes. Camerer et al. [53] and Gillan and Breeding [54] in Myers's [52] study show that individuals have trouble recalling their ignorance from the past; specifically, they cannot recall a time when they were complete beginners.

♣ The inherent complexity of tasks and applications

However, the new inventions and continual expansion of these technologies have resulted in a rise in the complexity of the tasks and applications, making those with fewer features more difficult to use and understand. Something like how an old-fashioned phone differs from a brand-new mobile device, for instance. Because it is impossible for technology with so many capabilities to have an interface as simple to learn and use as one with just a few functions, the difficulties in HCI design for fashionable mobile devices are relatively considerable compared to a conventional phone. In order to get around this problem, Myers [52] recommended employing metaphors to make interface items appear like something the user is already acquainted with. However, as Carroll [54] points out, this strategy makes things more complicated for users since it emphasizes familiarity with ideas rather than simplifying the interface itself.

♣ The variety of different aspects and requirements

Standards, visual design, technical writing, internationalization and performance, numerous levels of details, social considerations, legal difficulties, and implementation time are only some of the many facets of the human-computer interface that need to be balanced. In this article, we will take a high-level look at several research pertinent to the many factors that should be considered during HCI design. Bevan's [55] research on HCI standards will be beneficial since he discusses the various approaches for HCI and provides extensive definitions of each standard, making it easier to understand and implement the standards while designing an interface.

In contrast, Fetaji et al[14] . The study delves into the meat and potatoes of the human-computer interface graphic design, exploring such standard interaction modes as command-line languages, menus, direct manipulation, forms, query dialogue, windows, icons and pointers interface, and virtual reality. The research provided suggestions for fixing the problems with HCI visual design.

♣ Design is a creative process.

Due to a lack of theory and technique, developing a human-computer interface is still more of an artistic endeavor than a mechanical one to which rules strictly adhere. What T. calls "the creative design process." According to J. Howard et al., [56], the innovative process may be seen as a black box that takes in much data about design and spits out a bunch of different designs, some of which will be creative or artistic. Consider HCI design more along the lines of architectural design or even photography in that some essential technical skills and principles must be acquired, but ultimately the design is creative.

CONCLUSION

Based on this analysis, we can now identify specific examples of aesthetic considerations within HCI. The results provide a picture of how aesthetics and HCI are related. Aesthetics are considered in various areas of HCI, such as artifact design and research methodologies for gathering user data and assessing artifacts. It is clear from this survey that when the term "aesthetics" is used in human-computer interaction, it is most often about issues of visual or expressive quality. Expressive aesthetics can run into tension with practicality. We think the conflict emerged because we compared the influence of aesthetics on usability while solely referring to visual or expressive aesthetics. Aesthetics as a theory encompasses much more than the superficial or static appeal of user interfaces alone. It describes how one feels when interacting with a system. However, in this scenario, usability is not at odds with the aesthetics of interaction; on the contrary, it is integral to the aesthetics of interaction. Focusing on highly expressive aesthetics at the expense of usability may have a detrimental impact on the aesthetics of interaction and, by extension, the user's emotional response. Consequently, it is up to the aesthetics of interaction to determine where and how expressive aesthetics will be incorporated and how much they will operate in alignment with usability and the overall user experience, thereby favorably affecting the user's mood.

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Explaining Predictions with CNN Deep Neural Networks for Time Series Data

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Abstract

Our demonstration shows that CNN DNNs not only predict multivariate time series data, but also explain these predictions, crucial for confident decision-making in various applications. We present a 2-stage CNN architecture with specific kernel sizes, enabling us to generate saliency maps via gradient-based techniques for both time and feature analysis. These maps reveal which features and time intervals contribute to a given prediction, as well as highlight key joint feature contributions. We showcase our approach with predictions and explanations of average energy production for photovoltaic power plants.

Introduction

The growth of IoT technologies has led to a surge in multivariate time series data generation. Classifying these data is essential for effective utilization, making it a crucial research area in the machine learning field [Xing et al., 2010]. Deep neural networks, such as convolutional neural networks (CNNs) [LeCun et al., 1995], have emerged as state-of-the-art models for this task [Fawaz et al., 2018; Zheng et al., 2014; Zheng et al., 2016]. However, these networks are often considered as black box models with limited explainability, hindering the understanding of the model's behavior [Gilpin et al., 2018].

To address this issue, this work presents a method for achieving explainable deep neural network predictions using multivariate time series data. Our approach offers explanations for which features and time intervals were most important for a given prediction and how the joint contribution of all features affected the prediction.

METHODS

We have developed a two-stage CNN architecture to achieve explainable predictions for both time and feature dimensions in multivariate time series data. The first stage includes a 2D convolution layer that considers k time steps and 1 feature at a time to learn filters that recognize patterns in different features. The second stage uses a 1D convolution layer with a filter size of $k \times n$, where n is the number of features, to extract important patterns across all features. The architecture preserves the temporal and spatial dynamics of the data and relies on gradient-based approaches for generating saliency maps. We use Grad-CAM [Selvaraju et al., 2017], one of the most successful methods for generating saliency maps, to compute importance weights w^c for each class output c by globally averaging the gradients of the output score y^c with respect to the feature maps. The weighted combination of feature maps for class c is then computed using w^c and a ReLU activation function is applied to remove negative contributions.

MODEL	VALIDATION	TESTING
Proposed Net:	87%	86%
2D CNN:	84%	83%
1D CNN:	88%	87%
MLP:	72%	67%

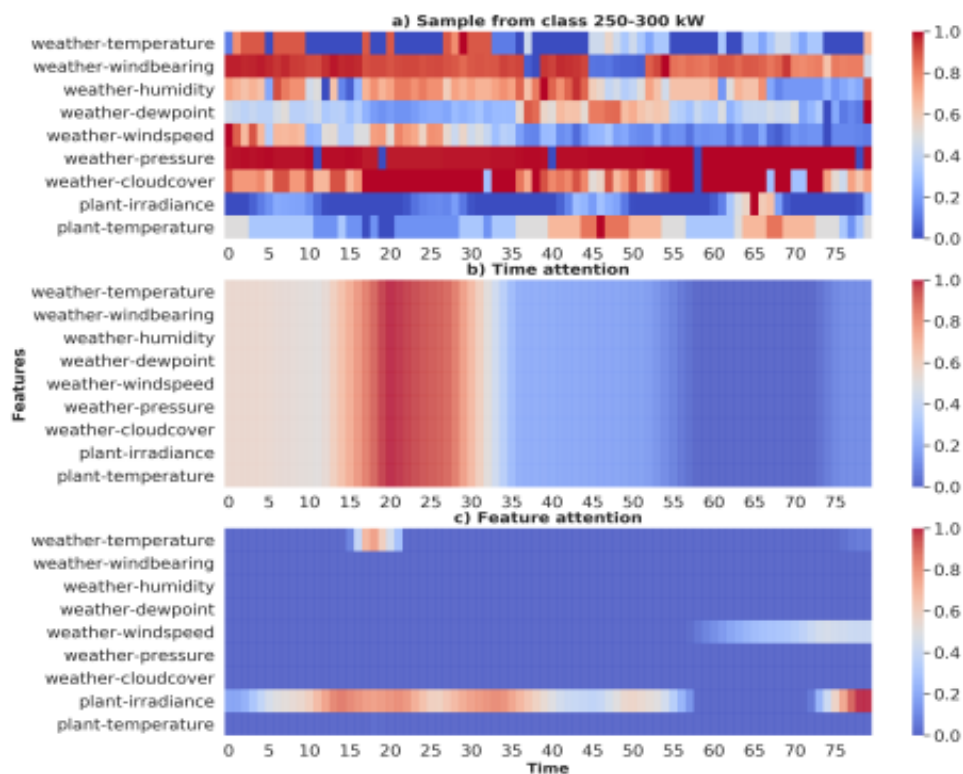
Table 1: Classification Accuracy of Different Deep Learning Models for Photovoltaic Energy Production

The table shows the classification accuracy of various deep learning models in predicting photovoltaic energy production. The proposed net outperforms the 2D CNN and MLP, while 1D CNN has the highest accuracy. $L^c_{1/2D}$ is used to identify the input data features that mostly contributed to the network's decision for a particular class. L^c_{2D} highlights the contribution of features at different time intervals, while L^c_{1D} highlights the combined impact of all features.

PREDICTIONS AND EXPLANATION

The paper discusses the use of a Convolutional Neural Network (CNN) for predicting the average energy production of photovoltaic power plants. The authors use a multivariate time series dataset and compare their proposed network architecture to 3 other benchmark deep learning models. The results show that the proposed model performs well in terms of accuracy and does not sacrifice accuracy for explainability. The authors also present the network's attention on time and features through visualizations, allowing them to see which factors were most important in the prediction. Overall, the results demonstrate that the proposed approach is able to provide accurate predictions while also offering transparent explanations.

Figure 1: Time and feature attention corresponding to a prediction for a sample of class 0-50 kW



The result shows that the network has correctly predicted the energy generation of a photovoltaic (PV) power plant as belonging to the lowest energy generation band, class 0-50 kW. Upon investigation of the explanation for this prediction, it was found that the network has put considerable attention on the PV plant irradiance feature as well as the weather temperature and wind-speed. These features were low at the time the network made its prediction. The network also shows more attention to the first half of the sample, which corresponds to unfavourable weather conditions for PV energy generation. These findings demonstrate the capability of the proposed approach to visualize the network's attention over the time dimension and features of multivariate time series data, thus providing insight into the reasoning behind a prediction.

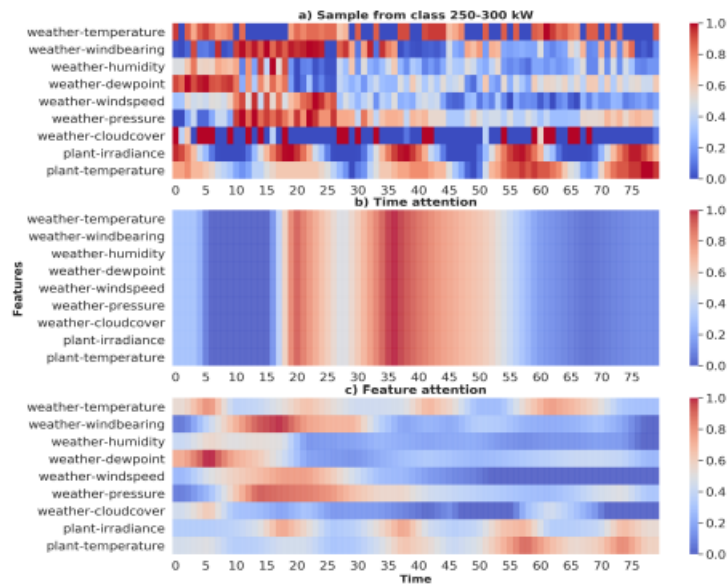


Figure 2: Time and feature attention corresponding to a prediction for a sample of class 250-300 kW

In the work described, a two-stage convolutional neural network architecture was designed to predict the average energy production of photovoltaic power plants. The network was able to produce predictions for six different classes of energy production, ranging from 0-50 kW to 250-300 kW.

When a sample of class 250-300 kW was analyzed, the network's attention was found to be more spread across the features, with a focus on high plant irradiance and temperature. This highlights that the network was able to identify and use relevant information in the multivariate time series data to make a prediction for this high energy production class. The attention was also spread across multiple time intervals, with a focus on times where the plant irradiance and temperature were high.

These results demonstrate the effectiveness of the proposed network architecture in visualizing the network's attention over both the time dimension and features of multivariate time series data, while also making accurate predictions. These explanations can be easily accessed through a web interface, offering valuable insights into the factors that contributed to the prediction of a high energy production class.

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Misuse of Science and Technology as a Threat to Society and Individual in H.G. Wells' *The Invisible Man*

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ABSTRACT

Literature has had a major impact on the development of society. It also has the power to change the thoughts and beliefs of the society. In this 21st century there is rapid development of science and technology. Internet has made this world as global village. Machines and gadgets are used in every sector right from agriculture to space station. Few scientists and people are using these inventions and discoveries against the society for their greediness. Nuclear weapons in the wars, cybercrime, abuse of social media are major challenges to the society. This research paper aims to warn the people about the problems and results of misuse of science and technology against the society by exploring H. G. Wells' *The Invisible Man*. In this novel Griffin, the scientist prepares chemical which can make living organism invisible by changing refractive index to that of air. He fails to use his discovery for the welfare of the humanity. Unfair use of science against the society leads to the tragic death of Griffin.

Keywords: Science, Invisibility, Humanity.

Introduction

Literature is representation of the society. It also has the power to influence the society. Twenty-first century has witnessed developments in science and technology. Artificial intelligence, internet, genetic engineering has made many things possible. Literature is known for imaginative ideas. These ideas act as source of inspiration to scientists who strive to make this imagination into reality. Every invention and discovery were illusion earlier. The tireless efforts of scientists made those things possible. For example, journey to the moon, spacewalk, video conference were once an imagination of writers. Invisibility of living organisms is one such thing which is yet to become reality. Scientific invention may become boon or bane based on its use by people. The concept of the misuse of scientific development by an individual as a threat both the individual and the society can be found in H.G Wells' *The Invisible Man*.

H.G Wells

H.G Wells is popular for his science fictions. He predicted many of the technological developments that happened in 20th and 21st centuries, as well as major events such as world war. He wrote *The Time Machine* (1895), *The Island of Dr. Moreau* (1896), *The Invisible Man* (1897) and *The War of the Worlds* (1898). His aim was to entertain the society by his unique imagination and also make aware people about problems due to misuse of science and technology.

Invisibility

This novel explores the condition of an individual who commits immoral acts by becoming invisible and proves Plato's idea about mythical artefact named Ring of Gyges which makes its wearer invisible. Plato declares that a person who wears Ring of Gyges which makes its wearer invisible and makes him to commit immoral acts. Socrates opposes it by declaring that anyone who wore Ring of Gyges and used it do whatever they wanted without fear of consequences would actually become a slave of their own desires. Griffin misuses his invention by looting and threatening the society which leads to his death. He suffers a lot due to his acts. The misuse of science and technology results in the harm to society and Griffin.

Griffin

Griffin was a medical student at University of London he was interested in light and optics. At the age of 22 he decided to devote his life to studying optics. He worked hard and developed radical theories which many felt would not work in reality. He strived to invent a drug which can change the refractive index of an object to that of air. He refused to publish his work. Griffin used his invention to harm the society in order to satisfy his greed. He tested his inventions on fabric. Later he tested it on his neighbor's cat which suffered a lot and died. Later Griffin put fire at his apartment and escaped.

Misuse of Science

H.G. Wells depicts the results of misuse of science on society and suffering of many people and various sections of society. This novel is set in rural Sussex, England in the 1890's. Griffin uses his invisibility to create a reign of Terror in Iping society.

Griffin arrived in Iping and stays at Coach and Horses Inn. Griffin behaves rude to Mrs. Hall. Mrs. Hall hears the sound of bottles smashing and when she asks Griffin about this, he tells her not to trouble him about his personal things and says that she can add extra charges to rent. Griffin stayed at Inn for a number of months. He does not attend church or communicate with anyone outside the village and only goes out at night. Doctor Cuss, local doctor of Iping meets Griffin and tries to know his secrets but Griffin threatens Cuss by pinching nose. Griffin's abnormal behaviour and delayed payment of rent made Mrs. Hall angry. She asked many questions and forced him to tell the truth. He responded with "who I am or what I am. I'll show you. By heaven! I will show you and started taking off his clothes (Wells 2019, p51). Griffin reveals his invisibility. He uses his invention to threaten the society.

Threat to Individual

Griffin used invisibility to loot the society. He was the culprit of robbery in Vicarage. He tortured Mr. Thomas Marvell who was a homeless person living in the Sussex countryside. Griffin made an alliance with him by praising him. By saying that he has chosen him specially to help him. Griffin declares "It is beast for country and pigs for people". Marvell initially agreed to help him and later denies. Griffin threatens to kill him if he stops to help him.

Griffin's acts became problem to Iping society. Griffin breaks the windows of the inn and cuts the village's telegraph wire before escaping. Everyone in Iping was too scared to come out of their houses. Once, Griffin entered The Jolly Cricketer's Club and disturbed the peace of the people.

Griffin used invisibility to cheat his friend who helped him. Doctor Kemp and Griffin studied at University College London. Griffin entered into Kemp's house and spoke with him in bedroom. Initially Kemp didn't believe in invisibility of Griffin. Later he began to believe Griffin's invention and offered him food and whisky. He allows Griffins to sleep in his bedroom. Griffin told Kemp that he wished to create a 'Reign of Terror' in order to establish "The Epoch of The Invisible Man". He requests Kemp to join hands with him. Kemp warns Griffin against misuse of invisibility. Griffin tried to kill Kemp but Kemp escaped. This shows that Griffin didn't have any gratitude for friend who helped him.

Threat to Individual

The misuse of science by a man will be threat to himself. Griffin suffered a lot after becoming invisible. He failed to gain appreciation and sympathy by people. He regularly attacked on people. His naked body suffered a lot due to cold. He couldn't eat because food was visible in his stomach before it was fully digested. Griffin admits that before becoming invisible, he did not think of disadvantages and difficulties that invisibility would bring. He was not able to go outside in the snow, rain or fog: "Rain, too, would make me a watery outline, A glistening surface of a man and fog – I should be like a painter bubble in a fog, a surface, a greasy glimmer of humanity." In this

world humans have attained ability to manipulate nature in remarkable ways through science and technology, but they must be aware of its inherent limitations.

Conclusion

This novel proves Thomas Fullers idea “As virtue is its own reward, so vice is its own punishment. Iping society united to hunt invisible Griffin. Griffin attacked on Kemp and Adye at Kemps house and shot Adye. Kemp ran into town to escape from Griffin. Kemp shouts: “The Invisible Man” and fights with Griffin. Griffin was beaten to death by mob.

The character of Griffin represents extraordinary scientists of this world. He was a genius but he failed to use his invention for right cause. He would have used his invention for the welfare of the society by offering his service to government and police. The aim of all inventions must be to aid for welfare of humanity and society without compromising with ethics and law of the land.

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Influence of Writing Techniques of Ravinder Singh on Contemporary Readers

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Abstract:

Each writer, critic, and researcher must examine a narrative technique. In other words, the use of a piece of art determines its success to a large extent. Authors like Ravinder Singh wrote semi-obscene literature that could change hands easily. They offer something serious to think to young readers. Most authors of contemporary Indian English literature have engineering backgrounds rather than literary ones, a general tendency in the country's English-language literature. The only thing we can find in contemporary Indian English writings is reading pleasure. The aim of the paper is to the Influence of the writing techniques of Ravinder Singh on contemporary readers. Many people strive to be either one of India's top writers of love novels or thrillers. One writer who could be considered to be seated next to Chetan Bhagat is Ravinder Singh. He largely presents fleeting, flimsy, and shallow viewpoints. The goal of a writer is to do something with the materials he has at his disposal, which are facts about life. As a result, he needs to know how to execute his plan to succeed. The content of a literary work is noticed when a technique is addressed. Additionally, romantic books can be full of energy and responsibility. An author who is well familiar with the preferences of contemporary readers is Ravinder Singh.

Key Words: Influences, writing techniques, Ravinder Singh, contemporary readers

Introduction:

Every author, critic, and scholar must therefore investigate a narrative approach. So a work of art's success largely depends on how it is used. Semi-obscene literature might readily shift hands thanks to authors like Ravinder Singh. "Through his use of dialogue and vivid descriptions, Singh creates a realistic and engaging world that readers can easily imagine and become immersed in" (Kaur and Singh 38). Young readers are given something profound to consider from them. In general, the English-language literature of the nation is dominated by authors with engineering backgrounds as opposed to those with literary ones. In compositions in modern Indian English, we get enjoyment in reading. . He offers ephemeral and superficial points of view. A writer wants to accomplish something with the resources at his disposal, which is real-world facts. So, to succeed, he must understand how to carry out his strategy. The intensity and responsibility in romance novels can also be high. Ravinder Singh is a writer who has a solid understanding of the tastes of modern readers.

The objective of the paper:

The paper's objective is to understand the influence of Ravinder Singh's writing techniques on contemporary readers.

Methodology :

The research paper is prepared using the descriptive method. The secondary sources used for the paper are mainly Ravinder Singh's novels and some other works.

Ravinder Singh's Life and Works: In Burla, Sambalpur, Odisha, India, on February 4, 1982, a Sikh family welcomed Ravinder Singh into the world. His formative years were spent in Burla Sambalpur City. He received his education from Guru Nanak. Odisha's Sambalpur Public School. He graduated from Guru Nanak Dev Engineering College in Karnataka with a Bachelor of Engineering in computer science engineering. He then relocated to Bhubaneswar and spent five years working for Infosys Technologies. He received his MBA from

Hyderabad's Indian School of Business. He was a Senior Program Manager at Microsoft when he decided to focus only on writing.

Singh's first work is based on a true event in which he met a girl and experienced love. After a six-month search, an editing team handed the work to Shristi, a publisher, and Shristi eventually published the book. Anupam Mittal presented the book at a press conference in Chandigarh. In the middle of 2011, he also released *I Too Had a Love Story* in audio format. The Kannada version of *I Too Had a Love Story* is named *Nannadu Ondu prema kathe*. With his publishing company Black Ink, Ravinder Singh began publishing books in 2015.

His Works: Ravinder Singh is an Indian author. He has written until now ten novels entitled "I Too Had a Love Story", "Can Love Happen Twice?", "Like it happened Yesterday", "Love Stories That Touched My Heart", "Tell Me A Story", "Your Dreams are Mine Now", "This Love That Feels Right", "Will You Still Love Me", "The Belated Bachelor party" and "Write Me A Love Story".

1. I, Too, Had a Love Story (2007)
2. Can love Happen Twice? (2011)
3. Love Stories That Touched My Heart (2012)
4. Like it Happened Yesterday (2013)
5. Your Dreams Are Mine Now (2014)
6. Tell Me a Story (2015)
7. This Love that Feels Right (2016)
8. Will You Still Love Me (2018)?
9. The Belated Bachelor party' (2019)
10. Write Me A Love Story (2021)

Narrative Techniques in Ravinder Singh's Novels: This section attempts to analyse how Ravinder's two romance novels use various narrative techniques to further the author's point of view. The narrative strategies listed below have been observed in several novels following extensive research and reading. However, first, let us understand what a narrative and technique are. A narrative is a story that follows a series of events with a plot and a setting. The adjective "narrative" refers to a story or narration. The three key elements of any creative writing are a technique, a message, and a style.

1. A message is something to convey, something the author wants to write about, and the subject of the narrative.
2. A style is the way words are used to communicate the story in its ultimate form.
3. A methodology is used to arrange and manage the materials.

The Relevance of the Study of a Narrative Technique In this way, each writer, critic, and researcher is compelled to examine a narrative approach. In other words, the use of a piece of art greatly influences its success. A writer has some resources, such as real-world facts, and intends to do something with them. Therefore, he needs to know how to achieve his goal. A literary work's content is lost if a technique is disregarded. Additionally, becoming familiar with literary strategies is possibly the most significant way studying literature can improve our ability to read perceptively, leading to a rise in our comprehension and enjoyment of the books we read.

Here, brief, basic sentences will be used to illustrate the effect of the literary effect. Simple sentences are said to express entire and comprehensive concepts at once. The aesthetic is straightforward but very pure. It requires little thought on the reader's part to understand the writer's point of view, which enables both parties to advance step by step through reading or writing. Many authors, including Ernest Miller Hemingway, have spent significant work crafting brief, straightforward phrases for their novels.

The rapid use of electronic materials in the new generation results from technological advancements. The telephone is the device that is utilised the most globally. Nowadays, people use phones for more than just making calls; they can also connect to the internet, take pictures, record videos, and use radios and calculators.

In addition to all of this, young people primarily use phones to send and receive text messages. Because message conversation is much quicker than phone calls, it is apparent that SMS has its vocabulary and various ways of spelling words than are used in everyday speech. This adjustment makes sense, given that all human languages have long words. While someone is spelling out ideas from his thoughts, the conversation may drag on at this length.

Each novel by Ravinder has a significant section on SMS grammar and spelling. Let's just concentrate on the lengthy discussion that Ravin and Simar had the night of Simar's birthday in *Can Love Happen Twice*. Manpreet Kaur and Gurmeet Singh in their article opine "Singh's writing style is marked by simplicity, clarity, and emotional depth, which makes his books accessible to a wide range of readers" (Kaur and Singh 36).

'U appear angry. M nt sure if u actually
meant it 2 b ok. I only hope u forgive me
' 'Cn forgive u only one 1 condition.
' 'Wat condition?'
'Whose turn first?'
'U actually wanna play kya?'
'But I ws about 2 sleep.'
'Oh u need nt play it dear.
Jst simplify accept dat u lost n I wil forgive u n thn we both cn sleep.'
'Yaar u knowI m scared of playin it.
I nvr played dis game wid a guy.'
'Same pinch! Even m scared. I nvr +
played this wid ny gal.
U still hv Tuna 2 help u.
M all alone n wer gonna play half d game,
jst d truth part n nt d dare s we can't
play it over the phone.'
'Go ahead.'
Hmmm... wer u actually annoyed by d
1st msg sent by Tuna?'
'No. In fact pass on my thanks
2 her if she is awake'
'LOL!! Ur turn.'
'Wer u nt afraid of sitting with
me in my dark balcony?'
'Y? do u bite? Well honestly,
I was, bt thn u made me comfortable.'
'M glad u said tht. Ur turn.'
'Wat ws d best moment of ur bday 2 day?'
'Hmmm... best moment... wen u showed up.'
'Really?'
'Hey. U cn't ask 2 questions in one go.
It's my turn now.'
'Do u hv a gf either in Belgium or
back in India?'
'No'

'It's diff 2 accept though, yet I wil assuming
dat we r playin this game honestly. Ur turn.'
'I m playin it with utmost honesty.

Meaning of some SMS abbreviations: -

U: you - nt: not - hv: have - Y: why - gal: girl - r: are - Cum: come - wud: would - M: am - gf: girlfriend
- bfr: before - cn: can - bf: boyfriend - btw: between - jst: just - 4: for - diff: difficult - n: and - 2: to, two, too - ur: your - thn: then - bt: but - bday: birthday - nvr: never - wid: with - ny: any - d: the - wer: were - tht: that - ws: was.

Discussion and Influence for Contemporary society: Modern authors or authors from emerging nations are now distinguished by the use of local language terminology in their writings to make readers feel at home while reading such novels, especially in the case of English literature.

It was the question of discussing some narrative techniques used by Ravinder Singh in the novels. The narrative point of view or perspective describes the narrator's position, that is, the storyteller's character, about the story being told. It can be thought of as a camera mounted on the narrator's shoulder that can also look back inside the narrator's mind. The first-person point of view tells a story through a narrator who is explicitly a character in their own story.

The narrator can forge a personal connection with the reader in a first-person story. The audience becomes a character when the viewpoint is in the second person. The pronouns "you," "your," and "yours" are used throughout this. The narrator wants to establish a stronger relationship with the audience rather than speaking to them directly. Second-person narratives and books are rather uncommon. The narrator addresses characters in the third-person narrative style as "he," "she," or "them," but never as "I," "us," or "you" (second-person). This makes it apparent that the narrator, who delivers the story and is not a character of any type within the story, or at least is not alluded to as such, is an unnamed entity or uninvolved individual. The third-person narration has typically been the most popular narrative style in literature. While novels (or other narrative works) typically adopt a single point of view throughout the book, some authors have experimented with other points of view, such as switching between multiple first-person narrators or switching between a first- and third-person narrative perspective.

Conclusions: Narrative methods have been highlighted through the research for the paper and after thoroughly reading the novels from cover to cover, including the use of short, simple phrases, long, complicated sentences, point of view, real place names, figures of speech, Indian terms, and flashback. These methods have been quite beneficial for getting a clear picture of Ravin's narrative abilities. It's crucial to note that in addition to the narrative devices used in novels. As a result, I urge future scholars and literature students interested in writing and reading love stories to analyse novels by Ravinder Singh, read novels I have already read, or learn about different narrative strategies.

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The Media Studies financing the characters of demand and desire in the Culture of living

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Abstract

The modern scenario is annihilating the Trojan commuting energy and is developing a compulsive despot attitude. This impact is found in the Media culture. It is deriving an energy in the younger generation where they are extracting more irks than a Stewart. This feature is rendering more demand attitudes which is featuring the popping of the desires and thus has the creativity of more lopsided junctions of procures.

This Study is made by taking some present Indian and American Films.

Keywords: Trojan, Media Culture, irks, Stewart, Films.

Introduction:

Media studies are an academic discipline that examines the production, content, and reception of various forms of media, such as film, television, music, and digital media. Within media studies, the analysis of characters in media is a crucial area of study, as characters play a key role in shaping narratives, themes, and messages.

In terms of financing characters in media, this can refer to a number of different aspects of the media industry. For example, financing can refer to the ways in which characters are developed and marketed to appeal to specific audiences, as well as how the production and distribution of media content is funded.

In media studies, financing the characters refers to the different ways in which characters in media are funded, developed and marketed to appeal to specific audiences. Producers of media content may be motivated by financial gain, critical acclaim, or the desire to tell a particular story. They may finance characters by investing their own resources, seeking out investors or partners, or by using crowd funding platforms. However, they are also subject to external pressures, such as the demands of financiers or distributors, who may require the inclusion of certain characters or themes in order to appeal to specific audiences.

The Financing of the Characters in the Culture

The Media Studies renders a very innovative rhythm and a fine blend of dictation of the events in the modern lives of men. Media has taken to many facets and the future to intercept is an inception of more multi-variant vanity of the Fairs.

In contemporary culture, the media has a significant influence on our desires and demands as consumers. From the products we purchase the lifestyles aspired. The media plays a very crucial role in shaping our preferences and choices. Media studies, as an academic discipline, explores the ways in which media messages are produced, distributed, and consumed, and how they influence social, cultural, and economic practices.

The theme of juggle is played with a huge distinctive ring of changes. The platform otherwise when compared to past has leaped to an altitude of infinity. This leap further prospers to a sismiastic runs and reaches the destinations which ultimately rhyme the rimmed denouement.

The study of the characters of the Media Studies in existing scenario when observed are ringing the denims of characters which are regionalized and hence become universal. The Present Day objects of implications are almost going on the hold of the items of desire, competition, and surrogation and thus pounces to the top with the wings of fire.

All the fields when ventured lead to one pondered way of destination which has mixed endings. The characters observed, always are desperate of a concept which they are also not sure of. The needs and pigments of desire syndromes, designate quality of raisers which defends nihilism of logic and only relates to demand.

Taking the study of the Film Culture, we find the logic aspect completely cut of relativity and settles for a scuttle and shuttle of misappropriations. The plot of the Films has characters which rejoices the abstract ideology and detains the concepts and later dilemmas of the situations are countered and created.

In this world everything is objectified and financed. The modes of the ordinary day-to-day life are also transactionised. Money is the priority diction of the prime drenches activated with legendary situations. The Films with a social message though goes with a high altitude of draping the messages to the viewers but still are financed with the vibes of dunces. The portrayal of women though have the reel appeal but taken to reality goes with a much more reckless presence. The captives of the beautiful presence are trekked and taken to the pinnacles and reaching there though beautiful at appeal has the laments of unfulfillment.

One of the key areas of interest in media studies is the relationship between media and consumer culture. Media messages, such as advertising and entertainment content, are designed to create desire and demand for particular products and lifestyles. Through the use of persuasive techniques, such as emotional appeals, social proof, and authority, media messages encourage consumers to purchase products and services that they may not necessarily need.

Audiences also play a critical role in the financing of characters in media. They may express their desires through their consumption choices, such as the films, television shows, or other media content they choose to watch, as well as through their participation in online communities and fan culture. Their desires may be shaped by a range of factors, including personal experiences, cultural background, and social norms.

The Media News Rooms dramatizing with the availability of the happenings renders the genuine requirement of the TDP Rankings, raking the peaks of the heaps had leaps of didactic locus.

The world at a press of a button concept has conceptualized the lack and this further leads to the desires which grow and ultimately fall in a Pandora box.

The social media is scaling to an extent which just delates to a regulating elevation and thus each and every individual rates these views and are lost in this world of illusion. We find some people saying that they have innumerable friends and followers in these social Medias that they are lost to this artificiality. They meet people but far from reality. They taking these characteristic features as truth, most of them are restricted and locked to their Mobile Phones that they just don't want to experience the reality of the life.

Media studies, scholars have identified a range of factors that contribute to the shaping of consumer demand and desire. One important factor is the role of cultural norms and values. Media messages often reflect and reinforce dominant cultural values and beliefs, such as the importance of wealth, beauty, and status. By promoting certain products and lifestyles as desirable and aspirational, the media reinforces these cultural values and encourages consumers to conform to them.

Another important factor is the use of symbolic imagery and storytelling. Media messages often use imagery and narratives that resonate with consumers' emotions and aspirations. For example, advertising for luxury goods often features glamorous and exotic locations, suggesting that purchasing the product will transport the

consumer to a more desirable and luxurious lifestyle. Similarly, entertainment content often features characters and storylines that embody particular values and aspirations, such as success, romance, and adventure.

Media studies also examine the ways in which media messages are distributed and consumed. The rise of digital media has led to new forms of advertising and entertainment content, such as influencer marketing and social media content. These new forms of media often blur the lines between advertising and entertainment, making it more difficult for consumers to distinguish between the two. As a result, media studies' scholars argue that it is important for consumers to develop critical media literacy skills, so that they can evaluate media messages and make informed choices as consumers.

The Reality Shows and the Picturisation of the things are so conceptualized that people are traumatized with onscreen emotions. The Viewers follow the characters to such an extent that true life has also taken illusions of these presentations.

The objectives of the desires and the compiling of the larger than life images are corresponded and when presented repeatedly, people begin to take these concepts as their den of objectives. These then add fragrance to the candles lit with imaginations of the world worn with the fairy tales.

Conclusion

The Media Studies plays a crucial role in understanding the ways in which media messages shape consumer demand and desire in contemporary culture. By exploring the production, distribution, and consumption of media messages, media studies scholars provide important insights into the ways in which media influences social, cultural, and economic practices. With the rise of new forms of media and advertising, media literacy skills have become more important than ever for consumers to make informed choices in a media-saturated world.

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The Latest Literary Understandings of Internet Communication in India

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Abstract:

The focus of the current essay is a consideration of a few literary works that shed light on the role that technology plays in Indian Society and Culture. Technology used to reach a large audience is known as mass media. For the vast majority of the general public, it serves as the main communication channel. Newspapers, magazines, radio, Television and the Internet are the most popular mass media platforms. It is impossible to ignore how the media affects people's lives. Today, technology has a significant impact on every aspect of human life, and literature reflects these realities. The creative writers attempt to recreate the world in unique ways. When it comes to the depiction of mass media, writers are doing well by focusing on the many-sided realities associated with modern technology. When several writers support new values and admit that technological expansion is essential whereas the other writers may condemn technical development, claiming that it is nothing but a byproduct of capitalism. However, literary texts can be benchmark to throw light upon people's practical use of technical knowledge. Indian writers have actively been responding to the sensations of every civilization. The technological ambiance has generated different imaginations in the minds of genius novelists, poets and writers. The technological vibes have always been there in literature in one or other forms. Right from letter to mobile and internet, every step of technological development has been recorded and given feathers in various literary productions. The present paper is a discussion on some of those literary renderings which help us to understand the place of technology in Indian society and culture. The discussion in the paper involves Wedding Album, a widely known play by Girish Karnad and Transmission, a scintillating novel by Hari Kunzru.

Keywords: Capitalism, Girish Karnad, Globalization, Hari Kunzru, Indian literature, Mediascapes, Simulacra, Technology, Technological determinism

1. Introduction

Technology used to reach a large audience is known as mass media. For the vast majority of the general public, it serves as the main communication channel. Newspapers, magazines, radio, Television and the Internet are the most popular mass media platforms. It is impossible to ignore how the media affects people's lives. Today, technology has a significant impact on every aspect of human life, and literature reflects these realities. The creative writers attempt to recreate the world in unique ways. When it comes to the depiction of mass media, writers are doing great jobs by focusing on the many-sided realities associated with modern technology. When several writers support new values and admit that technological expansion is essential whereas the other writers may condemn technical development, claiming that it is nothing but a byproduct of capitalism. However, literary texts can be benchmark to throw light upon people's practical use of technical knowledge. *The present paper is a discussion on literary renderings which help us to understand the place of technology in Indian society and culture. The discussion in the paper involves Wedding Album, a widely known play by Girish Karnad and Transmission, a scintillating novel by Hari Kunzru.*

1.1. Background

Indian writers have actively been responding to the sensations of every civilization. The technological ambiance has generated different imaginations in the minds of genius novelists, poets and writers. The technological vibes have always been there in literature in one or other forms. Right from letter to mobile and internet, every step of technological development has been recorded and given feathers in various literary productions.

Man's capacity to discover nature's mysteries has brought him to the supposedly technologically advanced world of today. His quest to discover the secrets of the world has led to the advancement of humans from hunter gatherers to their distinctly modern, scientific, and rational state of today. People invented things utilizing their practical understanding of daily life due to their necessity.

The use of human intellect to solve every problem that civilization has ever faced, whether as a whole or independently, has resulted in inventions throughout the course of human history. The ability to observe, understand and conduct experiments to determine the law regulating natural events was a skill that many brains used. Man's aptitude for rationality and his desire to learn more about how nature functions are now clearly seen in the scientific inquiries that have been conducted constantly for many years. Given their pragmatic attitude on life and the certainty that they will find faster, more enjoyable ways to complete routine activities, human ancestors' scientific temperament flourished.

A world that depends completely on technical advancements is therefore created as the pursuit of fresh information in every observable fact becomes a human passion. The impact of existing technology on a society and human relationships is generally obvious, but additional research is required to understand the explicit effects of excessive technology use. It is possible to place technology in our life by considering the literature that reflects the real world. The first human inventions were primitive in character and met the most fundamental needs for things like food, shelter, transportation, and tools for hunting animals, farming, and other things. The pursuit for new information gave humanity power, which made their lives tolerant yet varied. Previously, primitive people were restricted to their simple ways of living. In other words, the tale of technical advancement is simply that of how the human species has become stronger through tinkering with its environment.

It is true that despite their detrimental impacts on humanity, people still tend to think that technological advancements are necessary for humankind to advance. Even though India has always experienced technological advancement, our interaction with the West propelled us to make significant strides in improving the quality of our daily lives. Indigenous technology in India has a long history, dating back to the earliest agricultural communities, the Indus Valley Civilization, and numerous more ancient and mediaeval dynasties that are renowned for their inventions. Trigonometry, the sines concept, the concept of zero, the modern numeral system, the concept of power technology, the cotton gin, the rolling mill, the toe stirrup, the noria, the drill plough, and crucible Cast Steel are all innovations from pre-colonial India that have made significant contributions to science and technology. In terms of science and technology, pre-colonial India was hardly a tabula rasa, as James Mill noted in his *History of British India*. (Baber)

Due to colonial domination, western technologies have begun to emerge in India. To rule the native population in India, Western technological innovations were employed. It is possible to view the spread of technology in India as the spread of western culture. Numerous expeditions funded by the British East India Company later contributed to India's technological growth. Indian cotton was being sold to businesses in London by the British East India Company. Similar to how Portuguese, Dutch, and French colonial powers left their mark on Colonial India, where the foundations of Western Science were created, scientific research progress were the tipping point for India's transition from traditional to modern technology.

An invisible revolution in science and technology occurred in India as a result of the development of industry, the use of allopathic medicine, advanced military technology, and transportation systems like railroads. Despite the existence of cottage businesses, the independent India and the aspirations of the first Indian Prime Minister led to the formation of large industries. Following the advent of liberalisation, privatisation, and globalisation, India's population significantly advanced its technological capabilities. India's open economic policy has contributed to the growth of the mass media. A civilization that cannot be envisioned today without the internet has been made possible by its use for a variety of purposes. The social media network, which encompasses Facebook, Email, WhatsApp, YouTube, Instagram, and other online chat services, is responsible for creating the world as we know it today.

1.2. Arjun Appadurai on Globalization

Despite the fact that the industrial revolution accelerated technological advancement and expanded knowledge and learning opportunities, the essential technological innovations made before it also deserve recognition. Infact, Globalization was viewed as a condensing of the world, wherein the world unites as a global village in thought and deed. The process of globalization supports India's modern technical development. The Indian economy was opened up by globalization to more sophisticated technical tools and abilities. Arjun Appadurai contends that globalisation is fundamentally disjunctive, scalar, and contextual in his theorization of the phenomenon. Using the terms "ethnoscapes," "technoscapes," "mediascapes," "ideoscapes," and "finanscapes" he identifies five fundamental landscapes that are all related to people and their migration. According to Appadurai, globalisation takes place at the boundaries and intersections of these many landscapes. He defines "imagination as a social practice" in this framework and places imagination's contribution at the core of all processes of globalization.

Mediascapes are crucial for comprehending globalisation in each specific context since media flows undoubtedly have a substantial impact on how the mind functions. Globally variable synesthesia is one outcome of these interconnections, much as how people, ideas, capital, and technology combine to create new imagined worlds. This means that although similar imaginations can be triggered in various places of the world by the same kind of imagined environment, they do so in various ways.

Later, it was said that Appadurai's theory disregarded the negative effects of globalisation and provided an unduly optimistic take on it. Thus, in his latter works, Appadurai explores the "dark" aspect of globalization. He investigates the widespread violence against minorities around the world in *Fear of Small Numbers* and applies Freud's "fear of incompleteness" to explain why the majority group acts predatorily.

1.3. *Wedding Album* and Some Post-Modern Views

Simulacra and hyper-reality are two concepts I wish to use here. Hyper reality is related to Jean Baudrillard's concept of simulacra. The structures that concern Baudrillard are those where we are so enmeshed in the image and its reproductions that we are unable to access any reality outside of the image themselves, such as Disney World, television, and photography.

In *Wedding Album* by Girish Karnad, one can notice the impact of simulacra on human interactions. The story follows a middle-class family that has access to modern technology, such as the internet and computers, and how they become trapped by it. The use of the term "simulacra" refers to the idea that, due to the widespread availability of technology in society, human relationships have become hyper-real and artificial. The novel shows how human qualities like love, friendship, and the social institutions like marriage have evolved past their authentic forms and often appear fabricated.

The play *Wedding Album* reflects the impact of technology, particularly the internet and computers, on human interactions and relationships. Through the access to the technology, the play demonstrates how media and technology create a world that is not genuine but is instead a result of these advancements. The play highlights how media shapes human relationships, and often they don't align with reality. The play suggests that the concept of human relationships that we discuss today is a fabricated idea that exists only in people's imaginations and has no correlation to reality. It is a mere copy of the authentic relationship. As a result, the play shows that technology has led to the creation of a hyper-real society. The complexity of the world which is influenced by media and communication technologies is portrayed effectively in *Transmission* by Hari Kunzru.

1.4. Computer and Communication technologies as depicted by Hari kunzru

Our attention is drawn to *Transmission* by Hari Kunzru for a variety of reasons. Reading could be enjoyable because of its straightforward, realistic narrative style and comedic tones. Each step of an IT professional's day is portrayed with humour while keeping truth in mind. This is the reason why *Literary Review* calls it an aphoristic joke. The author draws readers in with lively surroundings. The reader will be exposed to a large

number of examples of how technology has influenced human behaviour right away. To increase their profits, IT companies hire employees and take advantage of their brainpower.

On the other hand, there are those who, like Arjun Mehta in the book, wish to travel abroad in order to work for a living. Arjun Mehta, the main character, who is being interviewed by Sunny Srinivasan, is also presented with the opportunity to become wealthy by working as an IT consultant at the IT firm Databodies. According to Srinivasan, the lack of IT talent in America led to the hiring of Indian nationals like Arjun Mehta. Sunny Srinivasan's offer, which also includes a check to see if Arjun Mehta is a real programmer with legitimate course certificates as opposed to others who have arrived with false ones, supports the aspiration of a middle-class individual to earn money abroad.

The realities of both India and America are successfully explored in the book. For an Indian, America is a place to make money and accumulate wealth, while for an American business, India is a source of labour and a market for its software. Because American college students are so involved in stakeboarding, there is a great need for Indian programmers in the US.

Indians view the conditions that are most frequent in American life as unusual, and this is expertly conveyed in the story. Arjun Mehta works with the Virugenix anti-virus team. Arjun notices a difference in Chriss just by looking at her. Chriss is also drawn to Arjun since he cares more about his health than his profession. People in Virugenix were interested to prove themselves. Virugenix wanted its employees to be Asperger's. For Arjun Mehta it was unbelievable. Arjun Mehta felt that Asperger's syndrome (A form of autism spectrum disorder) was a bad thing, a disease. Later on while filling the questionnaire he realised that the profile fitted the majority of people of his group possibly including him. He is also obsessive who likes repetition and hates ambiguity.

A stream of messages flowed around the intranet made Arjun Mehta astonished, when he discovered that at the virugenix Asperger's was a badge of honour. In addition to this, mild AS is associated with extremely high IQ scores and the people having this are good programmers. Asperger's sufferers are often brilliant, in other words who were wired differently. Arjun Mehta, the protagonist of the novel, worries whether he is healthy having all these qualities.

Condoms, sex toys, drug addiction, and daily computer work have all been picturesquely portrayed. Arjun Mehta, an Indian youngster, believes that gaining a profession and making money are more important than having sex at the age of 23. Unlike Chriss, who is pushed by the ecstasy-a drug, to have sex with Arjun Mehta. The chapter where Chriss arrives in Arjun Mehta's room at midnight to have sex with him knowing that he is a virgin gives the readers shivers.

Computer technology has shaped the work culture that is frequently governed by capitalists both in India and overseas. Although Arjun Mehta, like other Indian programmers, is often unfamiliar with the majority of American topics (however he is familiar with Aamir's p*** video CDs), he may wreak havoc on the planet by disseminating Leela viruses. Virugenix is held responsible for what Arjun Mehta has done. On the other hand Mehta is not ready to accept his work before his family.

Thus, Hari Kunzru crafted a literary space that depicts actual circumstances in which technological advancements like the internet and mass media shape our way of life and how we perceive ourselves. The human race might be subjected to anything and everything via the Internet and other kinds of mass communication like email. Arjun Mehta obtained employment via email, and by delivering a contagious file containing different computer viruses via email, he brought about widespread harm (Leela viruses). Transmission demonstrates the risks associated with mass media platforms as well as the backgrounds of those who create media, antivirus software, and viruses. In the end, one may imagine Arjun Mehta as a hero who has not been mastered by Technology.

1.5. Conclusion

We should be grateful for contemporary literature which responds to the different difficulties of our society in a thoughtful manner. The literary works *Transmission* and *Wedding Album* give readers a good opportunity to understand our reality, which is governed by technologies like mass media and computer. Both pieces deal with electronic intrusion into Indian families, but they do it in foreign settings, perhaps to illustrate how individuals are bought off by capitalist nations to create cutting-edge technologies, of which India is once more a market. Communication technology has significantly altered marriage and its traditions, and *Wedding Album* does a superb job of capturing this transformation. Literature can be a useful tool for figuring out how technology and the media are regarded in our culture because it tackles a variety of topics from a wide range of viewpoints.

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The Myth and Modern Negotiations on Old Age in Girish Karnad's Play *Yayati*

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Abstract:

The present paper aims to explore the understanding of old age in patterns of myth and modern outlooks in Girish Karnad's play *Yayati*. How does it interrogate Indian social norms? such as age being part of the human life experience, binary oppositions such as birth vs death, youth vs old age, and growth vs decay. If we look at the modern negotiations of aging in an individual life which interpreting with the ancient paradigms of accepting old age. The current paper also tries to map out the portrayal of old age in myth-based literary contexts and modern negotiations. The mythical references to human life are based on life stages. The renowned classical text formulations, which posit the whole human life span can be divided into ideal life stages, namely student(brahmachari), householder-grihastha, disengaged forest-dweller(vanaprastha), and Sanyasi (wandering ascetic). We can see such instances in Girish Karnad's play *Yayati*. The sarcastic dialogue between king Yayati and his son Pooru in Act four of the play brings out the realities of human life and returned his youngness to his son and decided to go for the self-realization of his sins with Sharmistha to execute responsibilities. The mythical theory enables reconstructions of the philosophical notions of old aging in *Yayati* play. The modernity trends in the aging discourse are significantly about the self-realization and self-investigation of an individual's past life since childhood with different traits of modern life. The allegory of age consists of literary narratives about how the aging body in literary engages in the discourse of Indian literary gerontology.

Keywords: *Myth, Modernity, Old Age, Aging-body, Literary Gerontology, Literary Narratives, Gender, Yayati, play, Girish Karnad, Indian society.*

Introduction:

By evaluating the representations of old age in which projects age in terms of fictional allegories in recent decades. Age as a category of identity in Indian discourse of social structure. It is also a challenge to redefine the myth and modern aging narratives in Indian literary contexts. This paper is trying to bring the different dimensions of old mythical narratives and modern negotiations by analyzing the play Girish Karnad's play *Yayati*.

Myths, legends, and folktales are the embodiments of cultural ethos and represent the underlying values and principles of life. Aging is a process that involves many biological and psychological changes in human consciousness. There are changes in accepting the aging process that nature has provided us. It is rightly pointed out that old has been traditionally valued in India just for being an old and aging father, mothers, grandparents, and aunts and other later-life relations occupy perhaps as many spouses in Indian literature as do young lovers and spouses in western literature. Harish Trivedi a well-known critic stated that an anthology of such literary narratives frames and showcases the terminal rite of passage in a variety of vividly imagined situations. (*Grey Areas*, Ira Raja).

Reading Yayati: Myth and Modern Perspectives of old age

In a well-written play *Yayati*, a powerful king of the kuru dynasty has a strong obsession with youthfulness and worldly pleasures. The idea of losing his youth is extremely painful for him to bear as he can't resist the temptation of sensual pleasures. In the original story of the Mahabharata, Yayati enjoys his son Pooru's youth for a thousand years. Through the Yayati character, Karnad has tried to bring forth the harsh realities of human

desires and pleasures and the absurdity of meaningless life, with all its elemental passions, conflicts within the man, and his eternal struggle to achieve, the fulfillment of desires.

Taking some scenes from the play, when king Yayati in the Mahabharata marries sharmishta secretly, queen Devyani, king Yayati's first Wife, daughter of shukracharya cursed Yayati of premature old age, agreed that only the curse may be uplifted if someone willing to give in his youth to accept the old age by transfer to yayathi. Eventually, yayati's son Puru agreed to rescue his father. The relationship between the pooru and his father yayathi explores the layers of the aging complexities of acceptance of the life truths, and racial tensions of Arya and Asura clans which foreground the tragic choices at the end of the play.

By asserting the yayati play with the projections of old age in modernity spectacles, gender differences, and binaries of male-female can be interpreted in aging phenomena in the Indian context, The Indian mythical theory enables reconstructions of the philosophical notions on old aging, how it is interrogated with Indian social norms such as class/community experiences, regional and historical differences. While aging is part of the life experience.

In Yayati play. where the king is not ready to accept the shukracharya's curse of untimely old age to intends to keep his youth forever while on another side his son is intended to know his ancestor's achievements, courage, victories by belonging to Kshatriyas clan. By accepting the curse of senectitude which is the final stage of the normal life span to know how his ancestors lead their life. Further, Pooru wants to know the truth about his birth by questioning his father king yayathi, revealing the truth about his first affair with a woman who belonged to the Asura community. From the beginning to the end of the play, king yayati is confronted with all bitterness of life such as lust, affair, eternal youth, and gender treatment towards the woman.

If we look at the modern negotiations of aging in individual life to be interpreted with the ancient paradigms of accepting old age. In the original mythical story of yayati, he had five sons, Pooru was the youngest one among them four refused their father's demands, the youngest one Pooru comes to save his father while in the crisis of shukracharya's curse of untimely old age for jilted Devayani. Facing the old age in the life of king Yayati and transferring to his son Puru is the most augmented dialogue in the play between son and father in reciprocal ways.

The sarcastic dialogue between king Yayati and Pooru in Acts III and IV brings out the realities of human life and returned his youth to his son and decided to go for self-realization for his sins, to execute his responsibilities with Sharmistha. The climax of the play shows how king accepts his life realities and handover his kingdom to Pooru. Karnad writes witty dialogues in a conversation between son and father as follows,

YAYATI: why? Are deeds of glory dead in this world? has the world become so cynical so corrupted that there is no place for...for. I am trying to shun old age, Pooru. I am not that foolish. I know it is inevitable. Let me have my normal term of youth. I shall take back the curse and whatever comes with it after a few years.

POORU: I offered all that.

YAYATI: And they didn't trust your word?

POORU: Trust? Glory? Sacrifices? Who was there to discuss the big words with? They refused to talk to me. Or even to listen as though mere listening would fitter them to some unknown commitment they retreated even as I approached them as if I was offering them the plague.

(Act III, Pp. 47-48).

Conclusively the play ends with the words of suthradhara that how Pooru raised questions to his father about whether those are meaningful or sort of despairs and exits with chithralekha, as following dialogues, YAYATI: Take back your youth, Pooru. Rule well. Let me go and face destiny in the wilds. (Embraces Pooru. When they part, Pooru has become young again and yayati is bent with age) POORU: (looks around): it is still dark, Father. Why don't you wait till dawn to leave? YAYATI: we have a long way to go, Pooru. Come, Sharmistha. (Act IV. Pp.69).

Taking Old age which is picturized in the play and aging into modernity lens have often been defined as different sides of the same coin with those calling gerontologists or geriatricians by sharing a common or even

identical interest in these topics. Both human biological and social norms have centered on identifying and inspecting age by detaching normal life from the pathological aspects of old age. This seemed to work well for most of the 20th century as it connected neatly with both institutionalizations of the modernist welfare state in which the older popular was regarded as a residual category.

As rightly Roman philosopher **Terence** claimed that “old age itself is a disease which summarizes a long-held view of aging and old age. It is very interesting that the fascination has been expressed predominantly in the study of binary oppositions such as birth vs death, youth vs old age, and growth vs decay. The theoretical models of aging and old age played a significant role in social and medical writings on old age. Our conception of the nature and value of aging is affected by our conception of nature, the divine, sacred time and eternity and the meaning of life.

If we look into the Indian myths, the perspectives of aging in religious practices engaged with the classical literary forms. In some important aspects, contrasting eastern and western traditions treat ‘age’ differently. Specially reference to the Buddhism and Hinduism breaking the cycle of rebirth, for Taoists, it is ‘living and finding in harmony with self and the heavens. While Buddhism emerged from Hinduism which believes in four truths about life that are connected with full of suffering, which are rooted in desire, extinction of desire, and following the eightfold path of life.

Yayati: A Text of Gerontology

Literary gerontology is defined as the understanding of age as life actions through cultural renderings. By understanding in the words of **Mike Hepworth** stated the meaning of old age in fiction as follows: “By stories of aging mean those narrative novels which are about aging as experienced by a central character as a small group of characters such as married couple or a family. (Mike Howarth: *Stories about aging*. (Pp.25-26)

As I have taken a review of Jan Baars in his genuine work ‘*Aging and the Art of Living*’ (John Hopkin University Press) about old age, he conceptualizes philosophical arguments from various mythical writings of Socrates, Plato, Aristotle, Cicero, to find how the old aging phenomenon, how they were in their period could offer us insights into contemporary’s art of living and leading life and interpret classical Greek and Roman thoughtful efforts about aging. Further, he talks about “chronometric time”, modern culture, authenticity, and personhood as apparatus for developing creative cultural notions of aging personal narratives for creating personal identity. Further, Jaan Baars argued that aging always takes place in time and in particular cultures with cultural encounters and time courses in the aging study. (**Baars. Pp.397**)

in the 21st century beginning, Literary gerontology is taken sequential turns in the modern era, ‘age’, ‘aging’, and ‘aged’ as a category of identity has been the agenda of literary scholars in the western academic in the 1970s in the terms of race, class, ethnicity, gender, and sexuality. Age is considered a significant theme in creative writing. Prof. Wyatt well-renowned scholar traces the gerontology approaches to aging in 1970-the 80s in the US combining literary criticism with gerontological issues. Initially, it has specific negative stereotypes of aging, then combined literary contexts with interdisciplinary dimensions i.e. Religion, philosophy, history, spirituality, arts, and literature. Understanding the paradigm shifts in how we perceive old age and becoming aged in modern and post-modernity and its preoccupations with the physical aspects such as beauty, sexuality, strength, and mental health. It has been portrayed in effectively in literary texts such Karnad’s *Yayati*, Vaidehi’s *Jaathre*, Shivarama Karanth’s *Mukhajjiya Kanasugalu*.

Conclusion:

Yayati is the representative of modern man. A modern man is controlled by his physical desires. Despite receiving much happiness in his life but he is not satisfied fully. Modern man is adapting immoral and unethical means of success to satisfy his desires, he is not aware of something else that exists beyond it. In the original mythical story of yayati, he had five sons, Pooru was the youngest one among them four refused their father’s demands, the youngest one Pooru comes to save his father while in the crisis of shukracharya’s curse of untimely old age for jilted Devayani. Yayati is an embodiment of a typical modern man, who despite life is dissatisfying and impatient. He is blindly in pursuit of pleasure. He takes the youth of his son Pooru to satisfy his physical needs. By doing so, he suppresses the value and morality of his character. Sensual pleasure is the

root of a person's desire and that desire, if not satisfied leads to anger, anger leads to his destruction. After he returns to Pooru's youth, he decided to go on to live for many years in the forest with sages, and at last, he became a hermit. While going to the forest he finally advises his son "Oh man, desire is never satisfied by indulgence. Like the sacrificial fire, it ever grows with every offering." (Y.P Kulkarni's translated version of *Shloka*).

In the late modernity trend, old age is defined as the discourse of the self-realization and self-investigation of an individual past since childhood, aging embedded with different traits of modern life. Girish Karnad is a modernist Indian writer, who connects mythical references to modern cultural narratives. Further presses the question of how narratives may constrain rather than liberate as well one narrative that has powerfully influenced our understanding of the relationship between society and the aging process is modernization theory. Changing the status of old people in modernizing societies is conceptualized primarily in terms of a conflict between the cultural values of western modernity and indigenous tradition significantly. The *yayati* story throws a challenging debate over the classical and modern way of writing and how the writer could perceive the mythical stories in modern contexts.

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Moving Beyond the Binary: Searching for Mythical Voices of LGBT in the Novel the Pregnant King

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Abstract

“A Woman! How can a woman rule?

It is like asking a man to bear children”. (*The Pregnant King*, P-21)

The main purpose of this paper is to examine the tracing light on the concept of LGBT which is reflecting in Indian Mythologies. It is notably analyzed in the novel *The Pregnant King*, which is a renowned literary work of Devadutt Patnaik. It is a Mythological fiction based on queer stories from the Mahabharata, a king who gets pregnant and it was questioned and not accepted by the society. All queer people from gays to lesbians to Hijras to transgendered people, their stories are remained invisible in Vyasa's Mahabharata or in any other versions of Mahabharata. They had not given any voices to the non- hetero sexual discourses in hegemonic writing of Mahabharata. Homosexuals are always existed in the society and always treated as suppress, ignored, label them as diseased.

The book thus throwing a light on many imperfections in the society. For instances female subordination and sexual humiliation of the characters like Shikhandini, the feminine or transgender warrior fought in Kurukshetra and killed Bhishma, Yuvanashva, the king of Vallabhi become a pregnant and gave birth to a boy named Mandhata and Mohini, it is the only female avatar of Vishnu, who exhibits gender variability and becoming pregnant and most interestingly bards of the Vallabhi tell the story of Bhangashvana- who lived half his life as a man, a son, a husband and a father and the other half as a woman, a daughter, a wife and a mother. These queer stories never told in Mahabharata, these are all untold stories of sexually neglected people. The transgender community of Hijras in India is one such subaltern identity who doesn't have any identity. They are doubly marginalized people, one is based on sex and another one based on body.

Keywords: Reading myth, voices of gender, binary identity, LGBT etc.

Introduction:

The Pregnant King is a story of Men and Women who are oppressed by a society founded on an unbending code of ethics and reflected queer stories from the Mahabharata a king who gets pregnant and the conflict that emerges because of that in the world driven by patriarchal values. It questions notions surrounding rigid gender norms. Not only gender but also sexuality has certain hegemonic normative connotations set out within the society. The narratives of Birth and life of Shikhandi (Mixture of man and woman), Valabhi's widow queen Shilavathi, description of Goddess **Bahugani** – here men are lived as women. They castrated themselves and some other queer stories in Mahabharata were not told. They are untold stories. These stories keep by bards of Kingdom and children of reign. These bards are telling the stories of a man who gave birth like a woman. They told the story of Aruni and pityful story of Bhangashvana. But the story of Yuvanashva, the king of Valabhi who is a pregnant king, his story was never narrated by bards. Stories of these

subversive characters never told in Mahabharata or in any version of Mahabharata. Because it is not a history, they think it was only a poet's imagination. Men can't be mother and mother's can't be king. The Pregnant King is story of a Mother who rules and a ruler who Mothers. The novel also delves into the stories of other characters like

- Shilavathi, Princess who can't be king because she is a woman . Shilavati, who scholared in Dharma Shastras.
- It also tells the story of Somvat and Sumedha two children friends who decide to get married despite being men.
- Another story of the Patron God of Valabhi Ileshwar Mahadev who becomes God on full Moon days and Goddess on new moon nights. "If Illeshwara wishes mangoes can grow on banyan trees and enuches can father sons" (Page no-12)
- Through out the story Yuvanashva swinging in the two directions of perceiving him self as man or a woman , Mother or Father or be a king.
- Through different tales Pattnaik as explorers the Tangled meanings of gender, Sex – these stories questions the standard narratives of the past.

The irony of the whole story is that the king who supposed to be the epitome of manhood and upholder of Dharma but he longing for to be called Mother from his Son Mandhata" what sounds sweetest being called Mother or being called Father"? Author as explored in the book is sexuality. He presents sex in an objective way limiting the act of making love to bodily attractions. Pattnaik explores rather difficult emotion connected to sexuality. A person's disc comfort in accepting gender based restrictions imposed by the society.

Myth Busting: LGBT

All queer people from gays to lesbians to hijras to transgendered people- their story remains invisible in Vyasa's version of Mahabharata. They didn't give voice to the non- heterosexual discourses in hegemonic writing of Mahabharata. Homosexuals have always existed in the society and always treated as suppress, ignored label them diseased. Sex for the pleasure is seen as dirty, antisocial even evil.

Traditional Hindu literary sources didn't speak homosexuality directly. Hindu traditional literary sources say little about homosexuality directly, Although there are many references, accounts to suggest the LGBTQ in ancient Hindu religion. Mahabharata has multiple examples of non binary genders and sexualities. Ex: Arjuna's transformation into Brihannala and Amba's rebirth as Shikhandi . Ancient Scripts gave voice to the non – heterosexual discourses. Homosexuals have always exist in the world of the divine but more often than not man made society has chosen to ignore, suppress, ridicule and label them as aberrants and diseased. They have been equated with rapists and molesters simply because they can only love differently. This gap make them different and make them away from the society's boundaries . In nature all kinds of sexuality exist. Sex is seen as a diversion and the destruction from the spiritual path. Celibacy has traditionally associated with holiness. Sex is permitted only within the confines of marriage. If it is not followed by the people, those are treated as culprits of the society. Ex: Kunti's illegitimate child Karna, she didn't accepting him as her child till his death. Sex for the pleasure is seen as dirty, Anti- social even evil.

In -Betweens :-

The author puts forth the concepts of masculine femininity and feelings of mother in a man body through Yuvanashva. Most interesting thing is that Devadutt Pattnaik not only challenges male female dichotomy but reiterates the existence of in between. The novel depicts how human beings struggle all their lives negotiating between sex and gender, duty and desire. Pattnaik also questions the gender roles assigned to individuals by society through the character Shilavati, the king's mother. Shilavati was aware that she is tied her body forever and the social norms would do all that is possible in order to remain as a ruler. The author brings up a very interesting argument over,

- Why women can't become the king and sit over the throne
 - She has all the intelligence and passion to rule vallabhi. But her dream is denied because she is a woman. Shilavati had a man's head And a woman's body. She has the body of a woman but the head of a king.
 - Inspite of her capacity to rule the kingdom she is forced to act only as her son's regent.
- These are all notions is echo Simone de Beauvoir's famous statement "one is not born a woman but it is made a woman". Women were married off only to bear the seed of their husbands.
- In the novel, here is a story of Bhangashvana- who lived half his life as a man, a son, a husband and a father and the other half as a woman, a daughter, a wife and a mother. Like Bhangashvana- the story of Yuvanashva was also same.

Modern retellings of the Mahabharata reveals how writing epics gives voice to the subordinated speakers. Here Pattnaik chooses to explore sexuality in terms of how gender based roles and rules can be disruptive and harmful and he uses several characters to drive his point of view. Throughout the book the author highlights the paradoxes and ambiguities of gender and their life in different perspective. These are new interpretations can demolish authority, stereotypes, icons and sexist values. The queer, usually seen as a figure of endangered species. And their social rejection is depicted in a new light in modern interpretations. As a king, a true follower of Dharma is in a dilemma that

"I am not sure that I am a man....I have created life outside me as men do but I have also created life inside me as women do".

Yuvanashva submits to his Dharma and accepts his duty as a king over his motherly affections for Mandhata. Yuvanashva was a forced to leave a dual life, one as he knew himself (a man who is a mother) and other as the world knew him (as a son of Shilavati, radical queen willing to be a king and rule the society, a husband of three wives , a great king and a Man). The irony of the whole story is that the king who is supposed to be the epitome of manhood and upholder of the Dharma longs, till his last breath to be called 'Mother' just once by his son Mandhata "what sounds sweetest, being called mother or being called father?" (Wikipedia). But in the end Yuvanashva can't reconcile his two roles as a mother and as a father. In climax part Yuvanashva decides to renounce as a king and becomes a hermit. He realises there is more to life than what he had imagined. He slowly raises his consciousness and becomes Nilkanth Bhairavi or Yuvanashvwar.

Conclusion:

The Pregnant king is a story of man and women who are oppressed by a society founded on an unbending code of ethics. It is a fictional interpretation of different and natural human sexual instincts but those are not accepted in the society till today also it is controversial and polluting the sanctity of conventional society. These fictional narratives will be fashioned out of mythological and imaginary tales where lines are blurred between men and women, sons and daughters , husbands and wives, fathers and mothers. Finally Pattnaik has made a point that the soul has no gender or a sex. All human beings should grow away from all limitations and bondages of sexuality and gender concept. Devadutt Pattnaik urges the reader to understand the pointless gender politics and attain the purpose of life through the words of **Yagnavalkya** " we are all trapped in the world of change, where we feel trapped by destiny and propelled by desire. The point of life is to find that which does not change the freedom from it all Moksha".

Images of a man and woman are vehicles of an idea. Two ideas, two expressions are the two halves of the same idea. They are mutually interdependent to each other. Without either there is neither. It is human nature to create such hierarchies and differences among the people. And their ideologies are preventing women from becoming king or Rishi's. The book thus throws a bright glaring light on so many such imperfections in the society, that was then and the society that it is now. That transgender community of hijras in India is one such subaltern identity who has survived and not lived or allowed to live. In society not only gender but also sexuality has certain hegemonic normative connotations by many modern theorists.

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Gender studies in the Short Stories of Shashi Deshpande

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Abstract:

The short story is concerned with a single effect conveyed in only one or a few significant episodes or scenes. It encourages economy of setting, concise narrative, and the omission of a complex plot; character is disclosed in action and dramatic encounters but is seldom fully developed. In the post-independence era, Women writers started portraying Indian life, with all its different hues and aspects. This paper shows the women's condition. A woman acts as a daughter, wife, and mother in a house. It is expected that she should be obedient, docile, timid, and submissive.

Shashi Deshpande's short stories highlight the change towards which our society is moving. But, millions of miles need to be covered for this change to be visible. All stories deal with the challenges which are to be won, the tough time of decision-making, and the struggle to get whatever a woman desires. Recent Indian Women's writings have a delineation of inner life and subtle interpersonal relationships. The woman is still in search of self-respect, happiness, new culture, individualism, sexual freedom, the quest for identity, protests, and concepts of rebelliousness have often remained alien ideas. She shows a realistic and authentic picture of women in her stories. Earlier, women were not supposed to raise their voices for their rights, protest against injustice or question already existing beliefs, customs, rituals, and blind beliefs. They were exploited by the patriarchal system in the name of custom and tradition. There is a gender bias. She provides a window for her rights into the world of women. Her ultimate goal is to gain freedom, self-respect, and love, but still, she is despised for being independent and having a voice of her own.

Keywords: Identity, patriarchy, marriage, loneliness, search, society, relationship, gender, freedom, exploitation, etc.

Introduction:

Shashi Deshpande is one of the eminent Indian writers in English. She was born in the small town of Dharwad in 1938. Her father was Adya Rangachar Sriranga, the renowned Kannada playwright, described as the 'Bernard Shaw' of the Kannada theatre. She was educated in Bangalore and Bombay, she has done an M.A. in English from Mysore University, Karnataka. She married Dr. Deshpande, a neuropathologist, and visited England in 1969. She became very popular as a novelist. She published an account of her experiences as short stories. Her short stories had been collected in five volumes: *The Legacy and Other Stories* (1978), *It Was Dark and Other Stories* (1986), *It Was the Nightingale and Other Stories* (1986), *The Miracle and Other Stories* (1986), and *The*

Intrusion and Other Stories (1993).

Short story, as a genre, appeared during the Pre-independence period on the literary horizon. It is a prominent mode of writing after post-war. Women writers came to know the potential of this form and with the power of their knowledge started portraying the variety of Indian life, with all its different hues. It suited me because it was less painstaking than the short stories. It encourages them to write and express their feelings and thought processes during their leisure besides household chores.

Shashi Deshpande defines the socio-literary themes and institutions such as house, family, society, especially Indian middle classes. She makes gender centered and her works deal with it to a great extent governed by gender. A desired transformation is wished for in her works, with the accommodation of the interests and welfare of women along with men. The tone of her stories is to be reconciliatory. She did not write with a specific reader in mind, nor are her works slanted to a marketplace. She writes about people and the reality of their lives.

Her stories portray the position of women and situations depicting the woman's positive reaffirmation of herself. Deshpande hardly allows her women to move away from the traditional norms of society. Her stories are primarily woman characters and relationships among family members. The woman faced many difficulties as a daughter, wife, and mother. She says that being a wife or a mother is not the proper position. According to her, it becomes an imposition only when the woman is laid rigid rules of how she should behave. She says, a woman completely depends on family members and relationships. She lives unhappily, dissatisfied with matters in hands of customs and tradition. This is what she has tried to convey through her writing.

I sincerely talk about plenty of her short stories thereby trying to show how women's condition in her short stories ultimately emerge as being, independent and powerful.

It reminds us of the famous quotation of Gloria Steinem. She says, "Don't think about making women fit the world — think about making the world fit women.". All the characters are individuals who belong to the common folk. They are pretty identifiable and undergo identifiable situations, in which all of us are a part, some or another day. The special thing to note in her writings is that she remains on the grass root level, but the elevation of her characters' experience through their actions makes the reading a pleasurable experience.

Gender studies in the Short Stories of Shashi Deshpande:

Gender studies is a field that promotes gender equality and combats discrimination against women and other marginalized groups. By examining the history of gender norms over time, it's possible to understand how they contribute to the continued oppression of women in modern society. According to Shashi Deshpande, Western feminism is entirely different from that Indian feminism. She feels that Western Feminist theories cannot be applied to the real-life situation in India. It is because the societal setup, the way of life, and the traditions of the Western lands are very different from that of the Indian subcontinent.

Deshpande believes that Indians have a wrong concept of feminism, and clearly argues that walking away from tradition. She says that many women have feminism in their lives without knowing that they actually possess it. So, they should have a clear idea of what feminism is. Feminism is using the stamina to endure the anguishes for the betterment of life and this is what she tries bringing out through her short stories.

Feminism is translating what is used up in endurance into something positive: a real strength. Like any other woman writer, Shashi Deshpande's focus is on women. Being an obedient and sincere daughter, a faithful wife, and a caring and loving mother are the three ideals of womanhood in Indian society. The wife's duty is to fulfil her husband's desires, becoming a devoted wife means submitting to the wishes of a husband. A woman who has a successful professional career must be willing to give it up in favour of her husband and this sacrifice is taken as a matter of fact. A Hindu wife may even sacrifice her sexual life. There are several short stories such as *The Legacy and Other Stories*, *It Was Dark*, *The Miracle and Other Stories*, *It Was the Nightingale*, *The Intrusion and Other Stories*, *Collected Stories*, etc. but I have selected *The Valley in the Shadow*, *The Dark* and *The Intrusion* for study.

The Valley in the Shadow:

The Valley in the Shadow is a short story. A crippled woman, the protagonist of the story who is married to a self-centred person is physically handicapped and has experienced an acute inferiority complex. She feels ashamed of her awkward walk. She remembers that even as a child she had noticed and looked at her. She has been recognized with a disgusting identity.

'The thing is,' I blurted out now, awkwardly and shamefacedly, my speech and words, I thought bitterly, as awkward as my walk, 'I can't really walk very much. I had polio when I was a child. I'm crippled.'

The heroine recalls how it is a great worry to her parents regarding her marriage. Usually, parents often worry about the marriage of the crippled woman. In our society. It is a matter of great burden for the parents if their daughter is physically handicapped. The responsibility of the parents is discussed here. The author couldn't condemn the patriarchal society, she just the fact of what is happening now a day. The customs and traditions of the marriage proved to be a defective commodity that fails to meet the groom's high expectations. Ultimately she gets married but it is a great mistake that he married her for money. It indicates the hypocrisy of the male mentality in society. The women are very disappointed about their physical disabilities because of the common folks of society. People were looking at her legs and other parts of her body. So, she was fed up with it.

The monkey man now came up to us, started his rattling, and said to the monkey, 'Saab ko salaam karo. The monkey obeyed and the spectators tittered appreciatively. I felt sick. Memsaab ko salaam karo,' he now said and I uttered a strangled protest.

Here the monkey man resembles the husband and the monkey seems to be a faithful wife. As we know that people appreciate sometimes when they feel happy.

Shashi Deshpande's short story is woman-oriented but it is conventional. She herself declares that I am not a feminist but her almost all her short stories woman-centered. But, she shows sympathy for women in the marginal culture. She realizes that the problem is very minute but it affects a lot of the women in society.

And now, I had a feeling that if the valley was in shadow no longer, if the sunshine fell on it, perhaps even its bareness and aridity would look beautiful.

All the worries are supposed to cure and heal. There is no point in articulating the psychological ordeals undergone by her female characters. The protagonist hopes ultimately.

The Intrusion and Other Stories:

It is a new collection of short stories from Shashi Deshpande who is one of India's most renowned woman writers. It highlights a world darkened by the despair, loneliness, disrespect, exploitation, identity, and unhappiness of women trying to break out of pre-defined roles in Hindu tradition. In the short stories, there is the newly married protagonist of the title story, whose self-respect and sense of self are violated by her crass and insensitive husband. His wife

finds herself involved in an affair because of her husband's indifference; the mother tries to forge a relationship with a hostile daughter.

It Was Dark:

'It Was Dark' reveals the unfortunate situation of an unmarried girl. Her life has been marginalized after having been exploited by an unfamiliar youngster, resulting in her pregnancy which leads to a great shock. The story makes us aware of the hurt the parents undergo when the young daughter is kidnapped and raped badly. The result of the girl is heart-rending. It made her into stone neither wanting to meet anybody or talk anything with anybody. The girl has blank, unseeing eyes. The eyes which had turned to face her mother returned back. The mother forces her daughter to tell her all that had happened and also about the man, and as if trying to ward off something, the girl moves her head violently which causes a wavering of her two thick plaits. The only words the girl utters are "It was dark"

The silence in this story is of a different kind. It is the silence, the feeling of isolation, of a kidnapped fourteen-year-old girl, brought back home after three days of abduction. It is the fear of being alone.

We've got to know. If it's necessary, the doctor says... Again he hesitated, casting about for the right word, "They'll have to do...do an... MTP," he ended lamely, obviously using the doctor's own words.

This short story highlights the anxiety regarding the Medical Termination of Pregnancy and soon... The parents have to face the grief and risk of pregnancy but also the censure of society, hidden behind fake sympathy.

He stared at me for a moment, then walked out. I was filled with triumph. The voices outside were hushed and low. It was like one of those condolence visits we had after my father's death. Low-voiced conversation, then my mother's loud, hysterical sobs. I had hated those visits, the visitors. They were the enemy, not my father's death.

It highlights maternal anxiety and paternal worries for handling the police case and other situations. The parents must tolerate the worst condition and fear. The lost words used by the father for his teenage daughter. It brings

despair to the mother who feels guilty. The girl has to live under so many margins in Indian society. The mother recalls her youth when she was marginalized. But she decides that she won't let her daughter live behind walls but here the daughter is sexually misused. As a girl, she was frightened to see a man exhibiting himself. The fear of violence had always been a part of the rest of her personal life.

The fear continued even after her marriage. Submission is the answer she was taught, and it made things easier. She remembers her mother whispering to her with her face turned away in embarrassment.

*All at once he was real. The enemy was not the dark, it was not being alone, it was the man.
Tell me. Please. Say something." I was begging now. Her eyes deserted me, went back to the ceiling. Her body
relaxed. The plaits lay still, heavy, inert.*

Thus, in a male-dominated society, the girl has been captured by the male desires in the story. She directly accused the man. But the protagonist of the story wants her daughter not to submit to such an uncivilized attitude of the patriarchal society.

Shashi Deshpande convinces the daughters of middle-class families. She has shown the Indian woman in their home. She has no voice even in the matter of her own marriage. The marginalization of women as daughters is clearly highlighted in her stories. She is sexually stereotyped and psychologically accustomed to the traditional culture in the Indian context.

We can predict all the discussions that the issues which Deshpande feels strongly about are the degradation that women experience and continue to experience and the subordination and discrimination. They are too weak, and too docile to shake off the shackles and this is what heightens the problems for most of the women characters in Shashi Deshpande's stories.

As a writer, she highlights the position of women and their degradation which is inevitable in a male-dominated society. Her female characters explore as well as realize the possibility of gaining more power. As a writer, Deshpande claims that she is seeking knowledge, retelling old stories.

Conclusion:

In my opinion of Shashi Deshpande, she feels that Western Feminist theories cannot be applied to India because of the societal setup. They often think it is about burning bras and walking out on your husband, or children or about not being married, not having children, etc. Deshpande tries to make this point very clear through her writings that Feminism is much more than rebellion it is actually a realization of self and respect for that self. Like any other woman writer, Shashi Deshpande's focus is on women. But the difference lies in the way she looks at them as human beings and not as mere women and also writes about the various problems they face, both at the personal and social levels. Shashi Deshpande confronts the reader with a set of situations in which living up to this ideal is far more important than women's personal rights.

The wife's duty is to fulfil her husband's expectations, allowing herself to be modelled by him, even if it is at the cost of losing her own self and personality. Becoming a devoted wife means submitting to the wishes of a

husband, who is very often a total stranger to a young bride, and who will take her regardless of her fears and emotions (The Intrusion). A woman who has a successful professional career must be willing to give it up in favor of her husband and this sacrifice is taken as a matter of fact. In such a context the decision to get on at work implies doubts, remorse, and a deep sense of guilt. A Hindu wife may even sacrifice her sexual life if her husband's ideals require it. We find that since ancient times, women have been segregated, codified, and victimized on the basis of their sex. Their sex has been a site over which patriarchy is relentlessly playing out its game of discrimination and discernment.

Shashi Deshpande clearly highlighted the Indian woman's disrespect, identity, isolation, unhappiness, confessions, exploitation, responsibility, etc. in the Indian patriarchal society.

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