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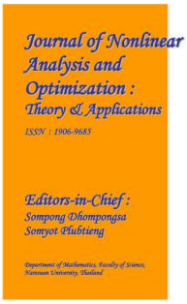

NEW TECHNICAL ECOSYSTEM FOR AI CYBER SECURITY USING MACHINE LEARNING ALGORITHM

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ABSTRACT: The rapid integration of artificial intelligence (AI) into critical sectors has revealed a complex landscape of cyber security challenges that are unique to these advanced technologies**.** Artificial intelligence (AI) is a powerful technology that helps cyber security teams automate repetitive tasks, accelerate threat detection and response, and improve the accuracy of their actions to strengthen the security posture against various security issues and cyber attacks. Machine learning is a powerful tool for investigating complex financial security threats that constantly evolve and can be difficult to predict. This research looked at various topics, including information security and areas where security strategy is likely to be discussed, such as military sources. Whereas this techno social reality might be well motivated by advances in efficiency and productivity,. Machine learning algorithms are constantly being improved to identify anomalies in the data that might indicate a security threats. We look at real examples of AI success and consider ethics and teamwork with human experts. AI cyber security, highlighting the need for strategies that not only protect systems but also preserve user privacy and ensure fairness across all operations. In addition to current strategies and ethical concerns, this paper explores future directions in AI cyber security.

Index Terms: AI Cyber security, Adversarial Attacks, Defensive Strategies, Ethical AI, Cyber Threats, web 3.0, Implications,

1. INTRODUCTION

Organizations are becoming more aware of information and related technologies in

almost every function, particularly in driving innovation and generating competitive advantage [1]. Advisory organizations, such as the National Institute of Standards and Technologies (NIST) are also encouraging the use of more proactive and adaptive approaches by shifting towards real-time assessments, continuous monitoring and data-driven analysis to identify, protect against, detect, respond to, and catalogue cyber attacks to prevent future security incidents [2]. Financial statements can be used to indicate the performance of a company. Investors, market analysts, and creditors exploit financial reports to investigate and assess the financial health and earnings potentials of a business [3]. The applications of AI in HRM can be found across the entire employee life cycle, starting from workforce planning, job design, recruitment, selection, performance, and rewards management, learning and development, and personalized employee experience [4]. Cyber-crime is a type of crime that uses digital media to commit fraud, steal data, or cause damage. Cyber-crime is an umbrella term that encompasses all forms of cyber-related crimes [5]. Even when the most robust preventive measures are in place, hackers will attempt to circumvent them. It is doubtful that cyber dangers will ever be fully eradicated since hackers are clever and persistent, always looking for new methods to penetrate a company's defenses [6]. Datafication, and AM from a subset of research literature from the IS field. Third, we analyze how such transformations relate to central sociotechnical tenets and outcomes. We subsequently discuss the ramifications of this new reality and theorize a reversed sociotechnical framework promoting both humanistic values and economic outcomes in digital work [7].

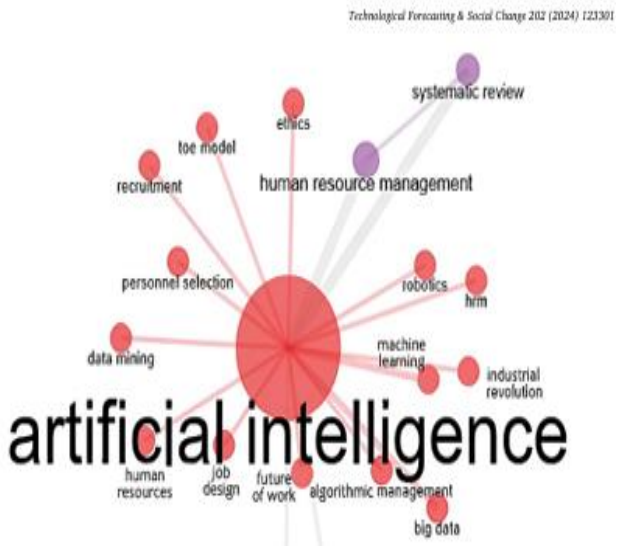

Fig. 1: AI in Cyber Security

2. RELATED WORKS

Data poisoning [9] represents a critical threat to AI systems, particularly because these systems rely heavily on data integrity for training and operation. [8]. A well-known cyber security framework proposed

by NIST was used to understand the solution categories needed to protect, detect, react and defend against cyber attacks [9]. The way the 'battlefield' environment is designed is essential from a spatial (space) standpoint. Breaking up the battlefield into zones to divide trustworthy and untrusted computing systems, [10]. Prior research in the fields of accounting and information systems has shed some light on the significant effects of financial reporting fraud on multiple levels of the economy. AI-based cyber security tools have emerged to help security teams efficiently mitigate risks and improve security. Given the heterogeneity of AI and cyber security, a uniformly accepted and consolidated taxonomy is needed to examine the literature on applying AI for cyber security [11]. Cyber security is a broad term encompassing all measures taken in an effort to safeguard an entity from cyber threats, including securing data and mitigating damage from a cyber security incident [12]. The cyber security landscape should include measures to protect the organization from crypto-jacking, data leaks, data phishing, and Internet of Things threats (IoT). One should use experienced IT professionals and ethical hackers to guarantee that your AI security solution is impenetrable [12]. One of the main game changers in the area of cyber security is the development of tools and methods that are supplemented as a sub-group by artificial intelligence (AI) [13]. AI systems can currently augment human decision-making, helping managers to override decision-making AI systems have autonomous problem-solving and decision-making capabilities, and can surpass human intelligence and decision-making abilities while AI adoption in HRM indicates promising benefits, its effectiveness depends on the successful adoption of AI in HRM.

3. SYSTEM MODELS

Model stealing and model inversion represent significant threats in the domain of AI cyber security, targeting the core intellectual properties and sensitive data integral to AI systems. These methods are particularly insidious because they can undermine the competitive advantage of technology companies and violate privacy laws [13]. The functions provide a comprehensive view of the lifecycle for managing cyber security over time. The solution categories listed under each function offer a good starting point to identify the AI use cases to improve the cyber security [14]. The proposed botnet detection model based on machine learning using DNS query data. The model is built on

the analysis that Threats of CS Threats routinely send lookup queries to the DNS system to find IP addresses of servers using automatically generated domain names [15]. Evasion attacks [19] represent a significant security threat to AI systems, particularly in environments where decisions are made based on input data that could be manipulated by an adversary [16].

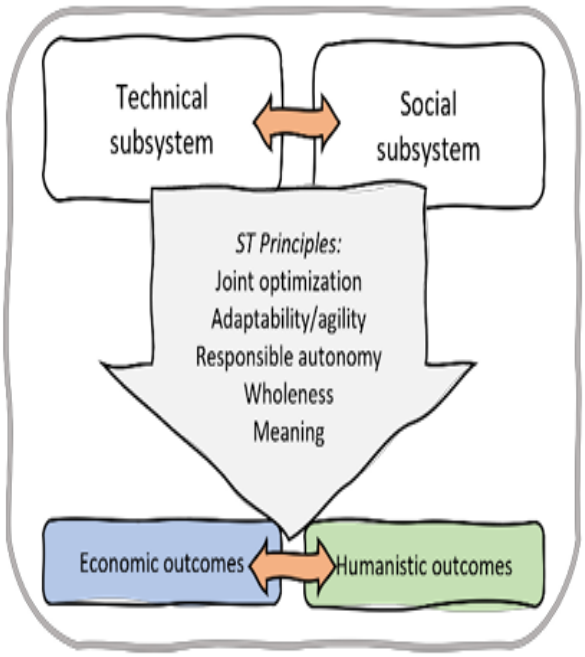

Fig. 2: The classical socio technical perspective.

4. PROPOSED SYSTEM

We review recent and recognized research papers of high-ranked IS publications critically enlightening on the emerging phenomena of AI and its transformational effects on work tasks in contemporary workplaces. We encode the label in the dataset. And we split the dataset to the Train and Test data for predict the fraud or non-fraud [17]. AI transcends human cognitive functions of learning, reasoning, or self-improvement to a machinery capacity. Such machine intelligence is dependent on the data it accesses, leading to potential bias, but also to the possibility of outperforming human intelligence by computing more information accurately in less time.

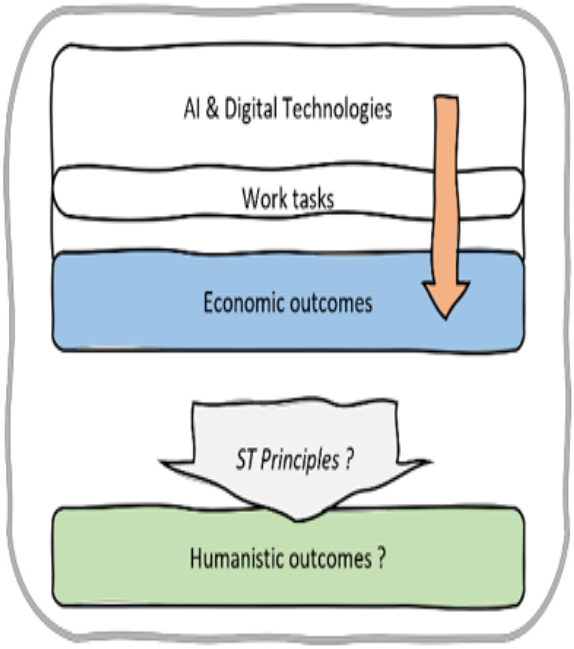

Fig. 3: Digital work with AI in a socio technical perspective.

5. ADABOOST ALGORITHM

The classical assumptions on STchange, this reversal affects the overarching principle of joint optimization in which the individual should be viewed as complementary to the machine rather than as an extension of it

[18]. We first build a weak model and then build a second model based on the errors from the first model. This process is repeated over and over again until we build a classifier that can make predictions accurately and the error is mini missed [19].

Algorithm behind Adaboost It works in the following:

Steps: 1. Initially Adaboost selects a training subset randomly

Step: 2. it iteratively trains the AdaBoost machine learning model by selecting the training set based on the accurate prediction of the last training

Step: 3. it assigns the higher weight to wrong classified observations so that in the next iteration these observations will get the high probability for classification

Step: 4. Also, It assigns the weight to the trained classifier in each iteration according to the accuracy of the classifier. The more accurate classifier will get high weight

Step: 5. This process iterates until the complete training data fits without any error or until reached to the specified maximum number of estimators

Systematic literature review (SLR): The SLR was based on the PRISMA methodology (Page et al., 2021), which helped identify the relevant literature on AI in HRM. The SLR was conducted as the synthesis of research papers is transparent and must be documented at each stage [20]. A cyber security threat can be a cyber-attack using malware to gain access to data, disrupt digital operations The screening stage consisted of going through the title, abstract, and keywords to filter papers that did not satisfy the search context.

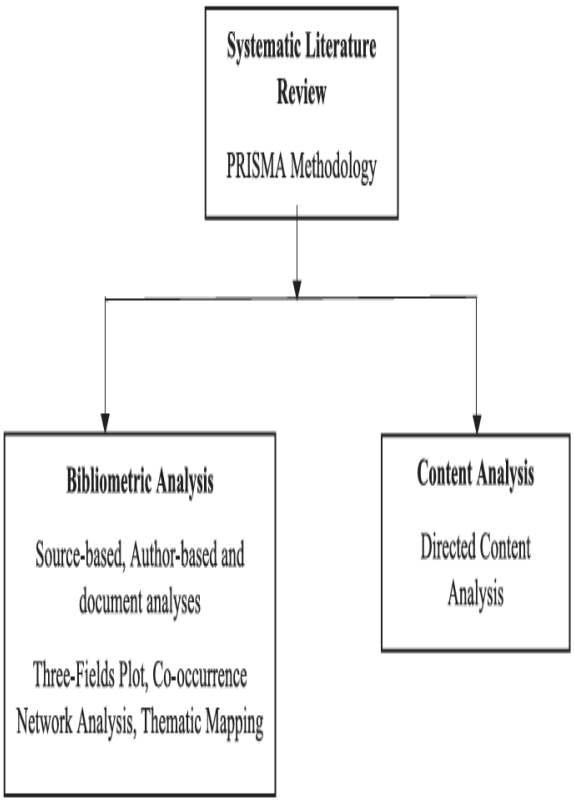

Fig. 4: Distributed Denial of Services Attack scenario.

6. INTERVENTION OF AI

The use of AI in cyber-attacks is a new and emerging trend. It is not yet clear how this will affect the future of cybercrime. There

are several different AI and machine learning techniques used in cyber security. The most common ones include strategies that use AI to identify and monitor malicious activities, detect cyber threats, and protect an organization's networks [21].

Recent Trends

Along with this trend, cyber security is also increasingly adopting cognitive technologies. AI-powered cognitive technologies are an essential part of a holistic approach to cyber security in which the human element guides the process and plays a pivotal role. In general, cyber defense is a constantly shifting space where the nature of security threats changes with each new development. Cyber security professionals who can adopt successful cognitive technologies and guide their human element on a holistic approach will be more successful in defending against cyber-attacks [22].

AI based mitigation of Cyber threats

Malware detection and identification: Artificial intelligence being used for malware detection and identification is still in its infancy, but it has the potential to revolutionize the way we deal with cyber crime. AI can help identify malicious files before they reach the end-user and, by doing so, can provide significant security benefits. Many different AI/ML approaches have been used to detect malware, some more successful than others [23].

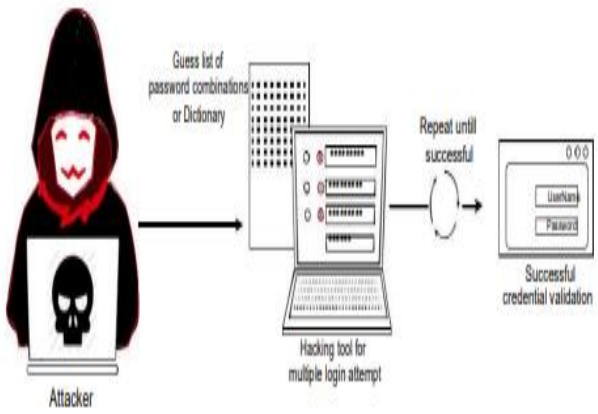

Fig. 5: Depiction of generalized principle of a Password Attack

7. PERFOMANCE METRICS

The Final Result will get generated based on the overall classification and prediction. The performance of this proposed approach is evaluated using some measures like, Accuracy: Accuracy of classifier refers to the ability of classifier. It predicts the class label correctly and the accuracy of the predictor refers to how well a given predictor can guess the value of predicted attribute for a new data. Even though the organization's information is essential to any organization, the cost of implementing AI technology is much higher, limiting the number of individuals who will use the technology for the safety of their data and information.

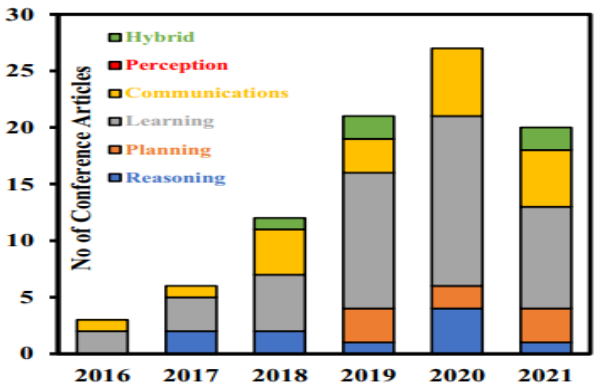

Fig. 6: Distribution of use of AI domain during

8. CONCLUSIONS AND FUTURE OPPORTUNITIES

AI introduces unique vulnerabilities distinct from traditional cybersecurity challenges—such as data poisoning, model theft, and adversarial attacks—which significantly complicate the security landscape. The framework gathers and summarizes the most referenced evidence for each area of investigation in order to provide an immediate possibility of synthesis that can be used to guide future research as well as management activities. The Classifications classifier gives high accuracy results that are comparable or superior to other fraud detection techniques in spite of working with reduced data and also compared with graph. Research shows that artificial intelligence has seemingly positively affected cyber security and risks. It is vital for managers to also allow automation in tasks that can be let go so that they can focus on organization-specific strategic priorities. This concerns managerial capabilities in deciding whether augmenting or automating AI applications is required for various HR functions. In future, discovery of additional information based on cause-event Fraud detection well as prediction of detection based on cause events, To solve these tensions for human thriving, we suggest a recalibration towards a technosocial perspective that considers an updated set of institutional logics accommodating for the changed technological embeddedness

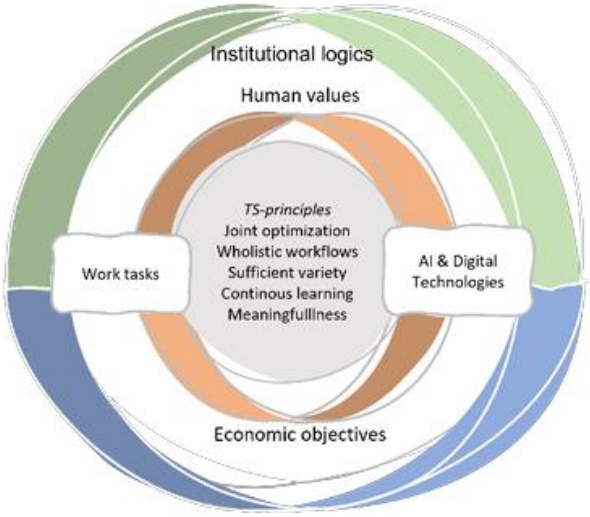

Fig. 7: Future framework for AI and Digital Work

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