

**Unleashing AI: Investigating the Impact on Computer Science**

**Interim Report**

**Student’s Name**: **Aire Lawrence Amiolemen**

**Banner ID**: **B00884248**

Contents

[1 A Summary Literature Review 3](#_Toc160819726)

[1.1 Artificial Intelligence 3](#_Toc160819727)

[1.2 Integration into computer Science 4](#_Toc160819728)

[1.3 Integration into computer applications in other fields 7](#_Toc160819729)

[1.4 Challenges of AI 10](#_Toc160819730)

[2 Research Design/Methodology 12](#_Toc160819731)

[2.1 Data Collection 14](#_Toc160819732)

[2.1.1 Data Used 14](#_Toc160819733)

[2.2 Exploratory Data Analysis (EDA) 15](#_Toc160819734)

[2.3 Data Preprocessing 16](#_Toc160819735)

[2.4 Data Analysis 16](#_Toc160819736)

[2.5 Ethical Considerations 16](#_Toc160819737)

[2.6 Data storage 17](#_Toc160819738)

[2.7 Evaluation 17](#_Toc160819739)

[3 Plan for completion 17](#_Toc160819740)

# A Summary Literature Review

## Artificial Intelligence

Artificial intelligence (AI) is changing sectors in the modern world, automating processes, and expanding the limits of human potential. Artificial intelligence has come a long way from the earliest days of expert systems and symbolic logic to the present day of deep learning and neural networks. AI is becoming increasingly valuable in a wide range of fields, and one of the most exciting new areas is the combination of AI and computer science. The secret to unlocking previously unheard-of levels of productivity and innovation is the strategic integration of AI and human potential (West and Allen, 2018). This will pave the way for organizations to prosper in the quickly changing business environment and in response to changing consumer needs. Adopting a balanced approach to automation and human creativity will promote organizational expansion, competitiveness, and the capacity to provide outstanding client experiences.

The utilization of intelligence feeds guarantees an up-to-date information base, enabling firms to address the most recent risks successfully. Artificial intelligence is known for its dynamic flexibility, which allows systems to learn from each occurrence and improve over time, strengthening their protective capacities. This technology is a great option to enhance the computer science experience since it provides a unique combination of features, including natural language synthesis, processing, and comprehension.

According to (Benbya, Davenport & Pachidi 2020), Artificial Intelligence is finding its way into more and more aspects of corporate operations, analytics, product customization, marketing, sales, customer service, and management services. AI has a great deal of potential for efficiency and growth. Still, it also has hazards because of its complexity, wide range of uses, and additional requirements that firms must meet to use it effectively. AI operators must carefully assess their integration preparedness and make well-informed decisions to fully utilize AI's potential and ensure its effective adoption (Habbal, 2024 p.122442). Businesses that approach AI integration with caution, foresight, and a thorough grasp of its capabilities will be best positioned to unlock unmatched opportunities for growth, innovation, and long-term success as AI continues to shape the face of business.

Organizational dynamics are being revolutionized by automation and artificial intelligence technologies, which allow employees to enhance the quality of their services and offer clients more value. Human leadership, teamwork, creativity, and social skills are still essential for firms to flourish, even when robots are better at tasks requiring speed, adaptability, toughness, and mathematical aptitude (Dhanabalan, 2018, p.835-845). Using post bots to assist postal workers in Germany and Norway illustrates this mutually beneficial interplay between human and computer talents. Companies must devise strategies to capitalize on their human staff's unique skills and capacities in addition to utilizing AI and automation as they advance.

## Integration into computer Science

Artificial intelligence (AI) in computer science enables computers to perform tasks that typically need human intelligence (Sarker, 2022, p. 158). The development of AI-capable algorithms and systems involves the capacity for decision-making and reasoning, natural language understanding, pattern recognition in large datasets, and data-driven learning. Artificial intelligence (AI) in computer science has numerous advantages. In addition, computer science needs to leverage a range of cutting-edge technologies, including artificial intelligence (AI), to build adaptive transformation and sense-and-respond capabilities that will foster innovation, improve customer satisfaction and experience, and advance improved performance. (Alghamdi, 2023 p.14296).

Artificial intelligence (AI) is advancing rapidly and addressing the demands of AI-intensive workloads requires developing computer systems. A growing number of specialized hardware accelerators, such as neuromorphic circuits, tensor processing units, and graphics processing units (GPUs), are being developed to optimize AI workloads. However, new architectural paradigms have emerged to meet the particular needs of AI algorithms, such as reconfigurable architectures, in-memory computing, and heterogeneous computing.

The capacity to efficiently utilize AI's capabilities is becoming increasingly important for IT breakthroughs and computer applications as it continues transforming the computer landscape. Innovators may fully use AI while minimizing risks and guaranteeing a sustainable and responsible integration of this ground-breaking technology by approaching AI deployment with diligence, foresight, and an ethical compass. Computer science can create a future where innovation, ethics, and advancement go hand in hand and drive economic success and societal well-being by adopting a responsible and comprehensive approach to AI.

Since new technologies enable AI to advance daily, much of its potential must be realized. A significant portion of computer science professionals concur that, given the state of our civilization at the moment, artificial intelligence (AI) may and will continue to be a valuable tool in many facets of the field. Still, it must partially replace the work of human developers. However, only time will tell if our assumptions about AI's future are correct, that is, that it will support computer science occupations rather than replace them, or incorrect, that AI will have minimal impact on the industry or displace human employment.

Academic and professional organizations' research on information systems (IS) and computer science indicates that artificial intelligence (AI) is gaining popularity (Nguyen, 2022, p. 7). Since the idea was initially put forth in the 1950s, artificial intelligence research has advanced steadily in recent years. Yet, artificial intelligence has expanded rapidly during the last ten to fifteen years due to the availability of ever-larger amounts of data, increased processing power, and the creation of innovative AI methods, learning algorithms, and applications.

AI has already significantly positively impacted computer science professions in several ways. For instance, over 1,800 malware attacks were reported in 2022, a quadruple increase from 447 in 2012, and over 5.5 billion data breaches had occurred in the previous ten years, according to Statista. Mistakes or oversights in human code cause these attacks, and since complicated programs and high-traffic websites can have up to millions of lines of code, it would be pretty simple for a small mistake to be overlooked by people and have disastrous consequences. An experienced programmer could only check a few hundred lines of code each hour; in contrast, AI can review thousands of lines of code per second, a rate exponentially higher than that of humans. Thus, artificial intelligence (AI) can replace the labour of thousands of programmers at once and detect errors in code that can prevent it from working as intended or potential flaws that could expose the code to hackers.

AI is also essential to ensure cyber security in computers to enhance cyber security. While acknowledging AI's significant potential for cybersecurity, the talk also addresses practical obstacles. A balanced approach is necessary to prevent misinterpreting typical behaviour as evil due to the potential risk of false positives. Ethical considerations like privacy concerns and responsible AI practices highlight the necessity of a measured and honest integration of AI in cybersecurity (Kumar, 2023 p.31-42).

AI has advanced significantly in India and currently offers many growth opportunities. The country has witnessed notable improvements in computer vision, natural language processing, and machine learning, with healthcare, agriculture, banking, and e-commerce applications. The Indian government has acted to promote AI innovation through initiatives like the National AI Strategy. Artificial intelligence has a real chance to help with economic modeling. Consider how difficult it is to create a game; many different situations must be tried before deciding. Comprehensive economic models are incorporated into game development to ensure balance, the sustainability of the gaming industry, and anti-corruption measures (Kalyanakrishnan, 2018 pp. 164-170).

## Integration into computer applications in other fields

The intersection of AI-driven intelligence and human creativity produces a powerful synergy that enables professionals to leverage AI skills to further their creative activities and achieve new heights. Creative disciplines are undergoing a paradigm shift due to these cutting-edge artificial intelligence technologies, opening up previously unthinkable possibilities for creative expression, inventive design, and technical achievements. These industries may witness limitless invention, and the realization of concepts once thought unfeasible with AI's ongoing progress and fusion with human inventiveness (Grilli, 2024).

AI's quick development and broad use can be attributed to several important aspects. The ability to train AI systems more extensively and precisely is made feasible by the vast volumes of readily available data. Furthermore, advanced, sophisticated algorithms and machine learning methods, which have enabled AI to handle various jobs and provide more accurate predictions and choices, have been primarily credited with its success. The potential of artificial intelligence (AI) has increased due to advancements in processing technology, such as specialized graphics processing units (GPUs) and other specialized hardware, which make AI systems faster and more effective (Dally, Keckler and Kirk, 2021). These powerful attributes have driven artificial intelligence's progress in many fields and helped explain its extensive application in various sectors.

Big tech firms interested in the explosion of AI development include Amazon, Microsoft, Google, Salesforce, and IBM. As a result, by making machine learning infrastructures available on the cloud, they have democratized the application of cognitive technologies. Research on integrating and using AI in these kinds of companies is becoming increasingly essential and cutting-edge. Studies can look into the specific approaches and techniques these businesses use to integrate AI into their operations and the advantages and challenges they encounter. This research provides crucial insights and guides the creation of effective adoption strategies, making it essential for other firms wishing to implement AI.

Business intelligence is being more and more impacted by artificial intelligence (AI). Business intelligence solutions driven by AI assist organizations in gathering, processing, and presenting data more successfully and economically. This could increase output, lower expenses, and more cost-effective decisions. Among these purposes is data analysis to find correlations, trends, and patterns. AI can assist in creating data visualizations that elucidate the data more thoroughly. Businesses can benefit from the insights and recommendations provided by AI models when making data-driven decisions (Tavera, 2021, p. 10026).

Since artificial intelligence promotes constructive user-business interactions, it is a widely used technology in e-commerce. Artificial intelligence helps by making suggestions and recommendations based on the user's search history and preferred views. AI chatbots also provide prompt customer service and drastically reduce complaints and questions. On the other hand, GPS technology uses artificial intelligence to identify the optimum route and present it to consumers. Additionally, MIT Institute research indicates that AI can provide accurate, current and up-to-date information about any location. It increases user safety by helping users choose the route and type of road that best meets their requirements. Convolutional and graph neural networks used in artificial intelligence are used by GPS and navigation to deliver these recommendations (Chang, 2013 p. 794521).

AI also has the power to completely transform transportation networks, making them greener, safer, and more effective. AI-powered autonomous cars have the potential to improve traffic flow and decrease accidents brought on by human error. Additionally, by determining the most effective routes and types of transportation, AI systems can optimize transportation networks, lowering emissions and congestion. The transportation sector is poised for a revolutionary change brought about by the integration of AI, which has the potential to alter how we commute and move commodities ultimately.

Edge computing improves real-time analytics by facilitating data processing nearer to the source. The Internet of Things (IoT) has seen the emergence of this technology, which provides quick data processing and instantaneous response from IoT devices. Furthermore, edge computing improves efficiency and safety in autonomous systems, such as self-driving automobiles, by making snap judgments (Sirojan et al., 2019). Its influence reaches several applications that require low latency, making it a significant trend for 2023.

According to (Notheisen, Hawlitschek and Weinhardt, 2017), blockchain, first developed for cryptocurrencies, has evolved into a revolutionary concept in computer science engineering. This distributed ledger technology is crucial because it provides safe, transparent, and unchangeable record-keeping. Blockchain enables end-to-end visibility in supply chain management by lowering fraud and errors. The healthcare industry uses its potential to manage patient records securely while maintaining data integrity and privacy. It transforms secure transactions in finance and speeds up cross-border payments. As we go into 2023, the expanding application of blockchain technology highlights its critical role in industries that require efficiency, security, and transparency.

The popularity of Conversational AI and the development of Natural Language Processing (NLP) have completely changed how we engage with technology. Chatbots and virtual assistants are products of NLP, which is powered by AI and allows robots to comprehend and produce human language. These AI-powered technologies improve user experiences in customer service by providing prompt, round-the-clock assistance. NLP helps to extract insights from medical records and makes virtual health consultations possible in the healthcare industry. NLP enables search engines to comprehend user queries more effectively, leading to more accurate results regarding information retrieval. These applications' widespread use confirms NLP and conversational AI's status as significant developments in computer science.

In the field of education, advanced language models give students an exceptional chance to deepen their understanding of code analysis and optimization while improving their programming abilities. Recognizing the bounds and restrictions of these statistical models is equally crucial, nevertheless. Here, we present two creative ways to integrate ChatGPT into software development classes. Each has its advantages and helps students better grasp the limitations and potential of AI. A captivating method of incorporating ChatGPT into software engineering courses is to provide students with refactoring projects that differ in difficulty. Refactoring, which involves reorganizing code to increase readability, maintainability, and efficiency, is a crucial skill in the software development industry.

## Challenges of AI

Notwithstanding notable advancements, several obstacles still need to be overcome, such as the requirement for programmable and scalable architectures, effective memory hierarchy designs, and efficient application of cutting-edge technologies like quantum and photonic computing (Zhu, 2023 p.0006). By tackling these obstacles and embracing advancements in computer architecture, we may fully realize the potential of artificial intelligence (AI) technologies and propel revolutionary progress across diverse fields such as healthcare, finance, autonomous systems, and more.

In addition to the development of AI algorithms, the emergence of new industries, communication channels, and legal frameworks has made it easier for organizations and digital infrastructures working to improve the world's information ecosystem to collect, process, and protect data (Engin & Treleaven 2019). Researchers can now harness and understand data in previously unreachable ways because of this dynamic shift in data management, spurring innovation and breakthroughs across various sectors. We can realize the full potential of artificial intelligence (AI) and digital data by embracing these technical developments and promoting responsible data stewardship. This will propel advancement and enlightenment in our globalized society.

The primary drawback of AI is that its efficacy depends on the quality of the training data (Singh, Thakur and Sharma, 2016). This indicates that the AI's performance may be affected in computer science if there are human flaws in any of the programs it is based on. Given that AI is thousands of times more productive than humans, mistakes in code can do significantly more harm than human error and, as a result, require a lot longer period to correct. AI has many benefits, but there are also risks associated with its use.

# Research Design/Methodology

In addition to providing valuable resources for the investigation, a robust methodology section helps the reader obtain specific knowledge about the proper procedures and methodologies used in the research (Saunders, 2012).

Conducting a logical evaluation of the strategies, methodologies, and ideas explored during the research will be the primary goal of this methodological portion. Thus, to ascertain the effects of releasing the power of artificial intelligence in computer science, the section offers a comprehensive analysis of various approaches and strategies used in ongoing research. The debate also looks into the importance of each technique and strategy and how it applies to the phenomenon or issue being investigated.

To provide reliable evidence in response to the research questions, the methodology section addresses the proper approach of locating, picking, and utilizing the most appropriate and adequate procedures or strategies.

The goal of this research is to optimize artificial intelligence's influence on computer science. The UCI Machine Learning Repository, Google, Kaggle, and other information science-related websites are examples of Open Data Platforms, where the study uses a publicly accessible dataset. Additionally, data from surveys and opinion polls conducted by research groups and think tanks is also taken into account.

To guarantee thorough and trustworthy data collection, the selection of studies is also based on scholarly publications and dependable internet sources. A comprehensive literature search was carried out with a variety of pertinent search terms, including "AI capability," "Computer science," "IT strategy," and "digital transformation," with an emphasis on studies that were released within the preceding five years and dealt with the application of AI in computer science.

The selected research will make use of a wide range of approaches, including case studies, experiments, and literature reviews. The variety of techniques employed here contributes to a complete and nuanced understanding of the subject matter. Furthermore, the research has been conducted over several years and published in several journals, highlighting the topic's ongoing development and increasing popularity.

Conversely, an all-encompassing perspective of the existing frameworks and techniques used in computer science, including artificial intelligence, is offered. This clarifies the possible advantages, difficulties, and opportunities related to AI adoption in computer science. To further facilitate further investigation and development in AI-driven computer strategies, prospective directions for future research are also given. This study ensures that organizations can successfully integrate AI technologies into their operations and remain competitive in the rapidly evolving technology landscape. It offers a strong basis for well-informed strategic planning and decision-making by means of an exhaustive and up-to-date literature review.

The research will also highlight how AI can revolutionize society by accelerating an increase in hyper-connectivity and high automation, which will mark the beginning of the computer revolution. But along with these incredible opportunities come difficulties and moral dilemmas that must be carefully considered in the commercial world. Further research will be conducted on data security and privacy, employment displacement, and bias risk. These are essential issues that should not be disregarded.

The research findings will unequivocally affirm the growing importance of artificial intelligence (AI) in computer science. Organizations are coming to terms with AI's potential to continuously evolve and enhance their capabilities over time, as demonstrated by the wide range of domains in which AI-powered solutions are being used. This technological wave is permeating various facets of IT operations. The results of this study collectively provide a better knowledge of how companies might use technology to accomplish their objectives and obtain a competitive edge. Technology will continue to be a vital and cutting-edge research issue as it develops and becomes increasingly integrated into corporate operations.

For a methodical and useful understanding of the procedures, the phases described below clearly outline the study approach.;

*Figure 1: research methodology*

## Data Collection

One of the most critical aspects of research is choosing an appropriate technique, which sets the parameters for the study and gathers relevant information from numerous sources to give context for the topic under study and validate the results. The two primary types of investigative approaches are qualitative and empirical methods (Sallee & Flood, 2012).

This study has employed a qualitative research methodology. The study involved collecting and analyzing a broad spectrum of factual data to thoroughly assess the organization's preparedness for constructing project resilience as well as the impact of resilience on long-term project outcomes.

Documents, audio recordings, and opinions from individuals or groups are the most common types of essential data collected and utilized in an inductive investigation. Furthermore, the most generally used data-gathering techniques in qualitative research methodologies include group discussions and in-person, structured or semi-structured interviews (Creswell, 2015). The current study used a qualitative research methodology and gathered data from secondary sources due to its comprehension of the topic.

### Data Used

As employed in the chosen studies, numerous methods, including literature reviews, experiments, and case studies, will be used to collect data. This variety of approaches contributes to a comprehensive and advanced understanding of the subject. Furthermore, the research will employ many methodologies to gather information, such as Google, Kaggle, and the UCI Machine Learning Repository. Opinion polls, research, and think tank surveys regarding computer science emphasize the field's continued growth and rising popularity.

The data collection aims to create a knowledgeable and proactive approach to AI integration that will set the stage for a prosperous future in which computer science and the labour force coexist peacefully with this ground-breaking technology. This quest for knowledge guarantees that information technology may successfully negotiate the shifting opportunities and difficulties presented by technological breakthroughs and progress to the forefront of their respective industries.

## Exploratory Data Analysis (EDA)

Exploratory data analysis, or EDA, characterizes the data using statistical and visual aids to highlight key data elements for additional analysis. EDA entails examining the dataset in various ways and providing an unbiased description and summary. To make sure the data is correct and devoid of obvious errors, exploratory data analysis is essential before proceeding with statistical modeling or machine learning.

To understand the structure of the dataset, summary statistics, and distribution of key variables, an initial EDA phase will be conducted. In this step, patterns, trends, and outliers will be found using visualizations such as scatter plots, box plots, and histograms. Through correlation research, potential predictors for artificial intelligence requirements will be identified. In order to guarantee that the data is used efficiently and to guide subsequent modeling decisions, EDA is crucial.

## Data Preprocessing

Cleaning and changing data to make it ready for analysis is known as data preprocessing. The goal of data preparation is to provide consistent, dependable, and analytically ready data. It raises the bar and increases the efficacy of the data mining process. This procedure contributes to the reduction of data volume, which facilitates analysis while yielding identical or nearly identical results. This cutback aids in the reduction of storage space as well. Dimensionality reduction, numerosity reduction, and data compression are a few data reduction methods.

Following exploratory data analysis, data preprocessing will involve controlling outliers, filling in missing values, and encoding categorical data. Through the removal of patterns, inconsistencies, incompleteness, and lack of behavior, this method will help transform the raw data into forms that are comprehensible and useful.

## Data Analysis

Webster and Watson's systematic literature review criteria will be used to conduct the inquiry. This process consists of three steps: The most recent research will be reviewed to identify databases and keywords. Subsequently, a backward search will be employed to examine the citations thoroughly, and a forward search will be used to locate the citations of the chosen articles. After the procedure, potential study subjects will be identified, and each article will be thematically grouped according to its distinct contents.

## Ethical Considerations

The initiative will prioritize data integrity and privacy while adhering to moral standards. Privacy is less likely because the dataset is publicly available and contains no sensitive or private information. However, the data gathered will be subject to strict data protection guidelines. Measures will be implemented to safeguard data integrity and confidentiality, including encryption, access controls, and regular security audits. Data anonymization will be considered to enhance privacy protection and adhere to moral data handling norms.

## Data storage

The information and data collected will be securely stored under strict access controls in a designated repository. Combining relational databases and distributed storage technologies will ensure data integrity and scalability. Comprehensive research reports, presentations, or publications about the impact of AI on computer science will be prepared upon completion of the study. T data collected will enable additional work on the ongoing analysis and future research in the same field to close any gaps that may be discovered.

## Evaluation

A validity assessment will be conducted to determine whether the data accurately measures the intended constructs. The research will also evaluate the data's representativeness to decide whether it appropriately reflects the variety. Finally, the appropriateness and rigour of the analytical and statistical methods used to analyze the data will be selected.

In contrast, the data and reviewed articles will be used to compare the efficacy of artificial intelligence with conventional methods based on their use in computer science. This assessment is necessary to show the incremental benefits of artificial intelligence techniques over traditional approaches.

# Plan for completion

Following the work plan, I have carefully progressed through the project's initialization and systematic literature research phases, ensuring a seamless launch for Unleashing AI: Investigating the Impact on Computer Science. The project's rationale, critical deliverables, risks, expected cost and resource requirements, and other relevant data were all documented and reviewed during the initiation phase using a systematic project discovery process. This extensive data will eventually be included in the project charter. The project gained from the Initiation Process in several ways; one was assisting in determining and communicating the project's key components, which will facilitate decision-making. Nonetheless, a thorough literature evaluation on the research issue was accomplished, guaranteeing that the study substantially contributes to the corpus of existing knowledge in computer science and artificial intelligence.

The project will now move forward to the methodology step, where I will receive a project plan that will assist me in conducting the study precisely and methodically. It ensures that the data collected is genuine, accurate, and consistent with the project's goals and objectives. The technical activities that will be completed for this project include data collecting, exploratory data analysis, data pretreatment and evaluation, and benchmarking. A wide range of methods, such as experiments, case studies, and literature reviews, will be employed in the chosen topics. This methodological diversity adds to a thorough and nuanced comprehension of the subject matter. Using the qualitative technique, the researcher could carefully evaluate a vast amount of data and establish the reliability of each piece of information obtained from published sources.

I'll ensure that this project is carefully evaluated per preset standards to ensure it achieves its goals. Apart from providing that the project objectives are specified, measurable, achievable, relevant, and time-bound (SMART), I will also ascertain whether all scheduled deliverables have been delivered by the established quality standards and within the allocated timeline. Finally, I will solicit feedback from my supervisor and other vital stakeholders to show whether the project was finished on time. The assessment will also examine how successfully I identified, assessed, and managed hazards during the project.

The significance of AI in influencing computer studies will be the basis of this research. Several computer applications are changing due to the widespread use of AI in computer software, which is powered by algorithms that can learn and evolve. In addition to examining the opportunities and problems of implementing AI, this study will look at the possible advantages of incorporating it into operations, analytics and cyber security.

Moreover, the study will concentrate on the significant influence of technical advancements on computer development, opening up new opportunities for wealth creation. Research endeavours aim to investigate how computer studies leverage the potential of the Internet of Things, cloud computing, and data analytics to enhance efficiency, optimize supply chain procedures, and obtain real-time insights and analytics across all sectors.

The study will also set the foundation for future research initiatives focusing on deciphering the complex web of AI's ramifications, including its impact on worker dynamics, consumer experiences, and operational efficiency. Furthermore, it will offer a platform for researching possible hazards and coming up with countermeasures, essential for guaranteeing a smooth and responsible integration of AI technology. Addressing ethical issues, data security, job displacement, and the fair allocation of rewards are all included in this.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Chapter | Task Name | %  completed | Week 1 | Week 2 | Week 3 | Week4 4 | Week 5 | Week 6 | Week 7 | Week8 | Week 9 | Week 10 | Week 11 | Week 12 | Week 13 | Week 14 | Week 15 |  |  |  |  |  |  |
| 1 | Literature review | 100% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1.1 Artificial Intelligence |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1.2Integration into computer science |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1.3Integration into other fields |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Challenges of AI |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Research Methodology | 100% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2.1 Data Collection |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2.2 Exploratory Data Analysis |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2.3 Data Preprocessing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2.4 Data Analysis |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2.5 Ethical Consideration |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2.6 Data Storage |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2.7 Evaluation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | Plan for Completion | 20% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | References | 100% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

References

Alghamdi, O.A. and Agag, G. (2023). Boosting Innovation Performance through Big Data Analytics Powered by Artificial Intelligence Use: An Empirical Exploration of the Role of Strategic Agility and Market Turbulence. *Sustainability*, [online] 15(19), pp.1–19. Available at: https://ideas.repec.org/a/gam/jsusta/v15y2023i19p14296-d1249256.html [Accessed 6 Mar. 2024].

Alghamdi, O.A. and Agag, G., 2023. Boosting innovation performance through big data analytics powered by artificial intelligence use: an empirical exploration of the role of strategic agility and market turbulence. Sustainability, 15(19), p.14296.

Allioui, H. and Mourdi, Y., 2023. Unleashing the potential of AI: Investigating cutting-edge technologies that are transforming businesses. International Journal of Computer Engineering and Data Science (IJCEDS), 3(2), pp.1-12.

Benbya, H., Davenport, T.H. and Pachidi, S. (2020). Artificial Intelligence in Organizations: Current State and Future Opportunities. *SSRN Electronic Journal*, 19(4). doi:https://doi.org/10.2139/ssrn.3741983.

Chang, I.C., Tai, H.T., Yeh, F.H., Hsieh, D.L. and Chang, S.H., 2013. A vanet-based a\* route planning algorithm for travelling time-and energy-efficient gps navigation app. International Journal of Distributed Sensor Networks, 9(7), p.794521.

Cockburn, I.M., Henderson, R. and Stern, S., 2018. The impact of artificial intelligence on innovation: An exploratory analysis. In The economics of artificial intelligence: An agenda (pp. 115-146). University of Chicago Press.

Dally, W.J., Keckler, S.W. and Kirk, D.B. (2021). Evolution of the Graphics Processing Unit (GPU). *IEEE Micro*, [online] 41(6), pp.42–51. doi:https://doi.org/10.1109/MM.2021.3113475.

Dhanabalan, T. and Sathish, A., 2018. Transforming Indian industries through artificial intelligence and robotics in industry 4.0. International Journal of Mechanical Engineering and Technology, 9(10), pp.835-845.

Dwivedi, Y.K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A. and Galanos, V., 2021. Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. International Journal of Information Management, 57, p.101994.

Engin, Z. and Treleaven, P. (2019). Algorithmic Government: Automating Public Services and Supporting Civil Servants in using Data Science Technologies. *The Computer Journal*, 62(3), pp.448–460. doi:https://doi.org/10.1093/comjnl/bxy082.

Grilli, L. and Pedota, M., 2024. Creativity and artificial intelligence: A multilevel perspective. Creativity and Innovation Management.

Habbal, A., Ali, M.K. and Abuzaraida, M.A. (2024). Artificial Intelligence Trust, Risk and Security Management (AI TRiSM): Frameworks, applications, challenges and future research directions. *Expert Systems with Applications*, [online] 240, p.122442. doi:https://doi.org/10.1016/j.eswa.2023.122442.

Iliadis, L., Maglogiannis, I., Papadopoulos, H., Sioutas, S. and Makris, C., 2014. Artificial intelligence applications and innovations. Springer.

Kalyanakrishnan, S., Panicker, R.A., Natarajan, S. and Rao, S., 2018, December. Opportunities and challenges for artificial intelligence in India. In Proceedings of the 2018 AAAI/ACM conference on AI, Ethics, and Society (pp. 164-170).

Kumar, S., Gupta, U., Singh, A. and Singh, A.K. (2023). Artificial Intelligence. *Journal of Computers Mechanical and Management*, 2(3), pp.31–42. doi:https://doi.org/10.57159/gadl.jcmm.2.3.23064.

Nguyen, Q.N., Sidorova, A. and Torres, R., 2022. Artificial intelligence in business: A literature review and research agenda. Communications of the Association for Information Systems, 50(1), p.7.

Notheisen, B., Hawlitschek, F. and Weinhardt, C. (2017). *BREAKING DOWN THE BLOCKCHAIN HYPE -TOWARDS A BLOCKCHAIN MARKET ENGINEERING APPROACH*. [online] pp.1062–1080. Available at: https://core.ac.uk/download/pdf/301372336.pdf [Accessed 29 Jul. 2022].

Progoulakis, I., Nikitakos, N., Rohmeyer, P., Bunin, B., Dalaklis, D. and Karamperidis, S., 2021. Perspectives on cyber security for offshore oil and gas assets. Journal of Marine Science and Engineering, 9(2), p.112.

Sarker, I.H., 2022. Ai-based modeling: Techniques, applications and research issues towards automation, intelligent and smart systems. SN Computer Science, 3(2), p.158.

Singh, A., Thakur, N. and Sharma, A. (2016). *A review of supervised machine learning algorithms*. [online] IEEE Xplore. Available at: https://ieeexplore.ieee.org/abstract/document/7724478.

Sirojan, T., Lu, S., Phung, B.T. and Ambikairajah, E. (2019). *Embedded Edge Computing for Real-time Smart Meter Data Analytics*. [online] IEEE Xplore. doi:https://doi.org/10.1109/SEST.2019.8849012.

Tavera Romero, C.A., Ortiz, J.H., Khalaf, O.I. and Ríos Prado, A., 2021. Business intelligence: business evolution after industry 4.0. Sustainability, 13(18), p.10026.

West, D. and Allen, J. (2018). *How artificial intelligence is transforming the world*. [online] Brookings. Available at: https://www.brookings.edu/articles/how-artificial-intelligence-is-transforming-the-world/.

Zaki, M., 2019. Digital transformation: harnessing digital technologies for the next generation of services. Journal of Services Marketing, 33(4), pp.429-435.

Zhu, S., Yu, T., Xu, T., Chen, H., Dustdar, S., Gigan, S., Gunduz, D., Hossain, E., Jin, Y., Lin, F. and Liu, B., 2023. Intelligent computing: the latest advances, challenges, and future. *Intelligent Computing*, *2*, p.0006.

Zhu, S., Yu, T., Xu, T., Chen, H., Schahram Dustdar, Sylvain Gigan, Deniz Gunduz, Hossain, E., Jin, Y., Lin, F., Liu, B.-N., Wan, Z., Zhang, J., Zhao, Z., Zhu, W., Chen, Z., Tariq Salim Durrani, Wang, H., Wu, J. and Zhang, T. (2023). Intelligent Computing: The Latest Advances, Challenges, and Future. *Intelligent Computing*, 2. doi:https://doi.org/10.34133/icomputing.0006.