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A Comparative Study of Human Intelligence and Artificial Intelligence

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ABSTRACT: Artificial Intelligence (AI) has impacted many aspects of everyday modern living, enabling us to be faster and more efficient by automating processes. However, although AI applications are prevalent and improving, there are many levels of distinctions between human intelligence and AI. This research paper presents the aspects of humans and AI comparing reasoning, learning, creativity, emotions, adaptability, and ethics. While AI can sort through several data and perform repetitive tasks, it does not have emotional intelligence, self-awareness, or ethical decision-making. This paper also highlights concerns regarding AI and its impact on society, discusses the ethical development of AI, and indicates understanding of the position of AI in relation to humans as we integrate AI into human life.

I. INTRODUCTION

Artificial Intelligence (AI) is an intricate part of modern society as it relates to functionality in areas including but not limited to, automated technologies or smart technologies, autonomous vehicles, and regular use of virtual assistants. No doubt AI is a powerful means of processing data and automating processes, it is absolutely devoid of consciousness, emotions, and independent reasoning that defines human intelligence. The intent of this paper is to explore the fundamental differences of AI and human cognition related to how each can function, adapt, and relate to various aspects of their respective industries. In addition, the research will provide insight into ethical concerns of the implementation of AI and the related impacts of AI on industries such as healthcare, education, and business in general.

II. IBACKGROUND HISTORY OF AI

The concept of AI began in the mid-20th century, when researchers imagined machines that could mimic some aspects of human thinking. One large milestone occurred in 1950, when Alan Turing presented what has come to be known as the Turing Test, a thought process to consider whether a machine can show human-like behaviors. Early efforts towards AI typically included rule-based systems that followed simple rules given to them and operated in a constrained and narrow environment. However, as computing technology developed, new techniques like machine learning and deep learning emerged, allowing systems to become better through training with data.

Some important highlights over the years include the rising popularity of expert systems in the 1980s, artificial neural networks, and deep learning models now. There are now many applications of AI across many domains, including diagnosing an injury or disease, recommending news articles, producing predictive analytics, and creating customized experiences.

III. CATEGORIES OF ARTIFICIAL INTELLIGENCE

AI is generally divided into three distinct categories based on capability:

- Narrow AI (Weak AI): These systems are designed to handle specific tasks efficiently, such as voice assistants (e.g., Siri, Alexa), recommendation engines (e.g., Netflix, YouTube), or chatbots. They perform within a limited scope and do not possess genuine intelligence.
- General AI (Strong AI): A theoretical form of AI that would be capable of performing any intellectual task a human can do. It involves self-awareness, adaptability, and independent reasoning, but this form of AI has not yet been achieved.

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• Super AI: This is a conceptual future version of AI that surpasses human intelligence in every aspect. Although it remains hypothetical, it raises concerns about control and safety due to its potential superiority in cognitive functions.

IV. ESSENTIALLY DIFFERENT ATTRIBUTES OF HUMAN AND ARTIFICIAL INTELLIGENCE

IV.I Thought and Understanding

Humans have the capacity to think abstractly, introspectively, and critically. They draw context, infer meanings, and apply knowledge innovatively. AI relies on algorithms and statistical models, interpreting data but without real comprehension or awareness. They can mimic reasoning, but without the layers of depth and comprehension which humans would apply in an analogous situation.

IV.II Learning Mechanisms

Human learning is formed by experience, emotions, social interaction, and some innate ability to adapt, humans learn from facts, mistakes, environment, and relationships. AI, on the other hand, need to be given structured data, and then learn patterns from this data via things like supervised learning. AI systems lack consciousness and learn, and only learn through programmed models.

IV.III Creativity and Originality

Human creativity is based on imagination, emotions, and lived experience, it is visible through art, innovation, storytelling, and problem-solving. AI can create things like music, generate text, and create images, it analyzes or draws from existing datasets, and creates outputs based on copying patterns. The outputs of AI reflect imitation rather than imagination.

IV.IV Emotional Intelligence and Awareness

Emotions affect human behavior, behavior decisions and social relationships. Humans experience affectively based complex emotional states and utilize emotions to navigate social relationships and determine judgment. AI does not possess the biological and psychological mechanisms to feel emotion. It can react emotionally in conversations but does not truly "feel".

IV.V Decision-Making Processes

Human decisions include ethical values, feelings, intuitive reasoning or empathy, as well as their experiences. Humans utilize moral reasoning and empathy when making decisions under uncertainty. AI decisions must use large quantities of relevant data, programmed state decisions, logic, and made decisions based on probability; AI decisions do not take or consider the social implications of their decision/action or the decisions made through AI technology.

IV.VII Flexibility and Adaptation

Humans can respond in real time within newly open circumstances and make decisions based on that judgment—often described as practical sense or common sense—albeit with limited information. They also adapt to the nuance of their lived life experiences. AI can also update its programming via retraining or reinforcement learning but cannot achieve autonomous flexibility or adaptation without reprogramming or new data. AI stays within its program design parameters.

V. ETHICAL ISSUES WITH ARTIFICIAL INTELLIGENCE

AI does promise to offer numerous benefits but it also raises serious ethical dilemmas that need to be assessed:

V.I Displacement of Jobs

AI is replacing human workers in many job categories because it can automate repetitive tasks for industries like manufacturing, customer service, or transportation. it may help productivity and operational efficiencies but frequently highlights the disparity in economic opportunity between skilled and unskilled workers.

V.II Inherent Bias

AI systems are trained with historical data, and there may be inherent bias buried in the historical data. Unless they are addressed, the bias will become the measure of success for much of AI, and lead to more discrimination. There have



been facial recognition systems that had lower accuracy scores identifying people of minority ethnicity than their majority counterparts.

V.III Privacy and Data Privacy

The development of AI with regards to data analysis and surveillance raises more questions regarding privacy. User data has often been collected and analyzed to improve service delivery often without user knowledge nor consent. The organization that interpreted user data often never held themselves accountable for misusing the data, and users typically are not informed. Ethical data governance is an essential item and is often ignored.

V.IV Control and Accountability

As AI systems become increasingly complex and independent, there are concerns about how to prevent human oversight. In fields such as defense, cybersecurity, and financial systems, it is conceivable for AI to produce results outside of human control. Keeping these technologies in the human purview and holding them accountable is imperative to minimize negative outcomes.

VI. THE FUTURE OF AI

As AI continues to advance at an accelerating pace, we can expect technologies developed that will change an entire industry and how humans interact with machines alsogoal are not for humans.Number various change are as follows:

VI.I Advancements in Healthcare

Healthcare is in the process of AI advancements through precision diagnostics, personalized medicines and protocols, and roboticassisted surgery. Algorithms capable of processing medical and personality tests, Clinical assessments and even artificial intelligence device make large improvements in patient metrics. Patient outcomes, increase compliance and satisfaction wearincreased productivity, whether they be in the form of treats patients over all steady decrease traumatic levels of stress, anxiety, and across healthcare professional, while awakening non AI those medical processes letting the AI let you must for everything non related.

VI.II Personalized Education

Adaptive human and machine technologies will continue to revolutionize poor educational matching experiences, which will now be able to become more automatically via adaptive learning technologyoprincipal's should become experts in personalized learning willbe the focus ofearly childhood learning services still AI robots whether human or non-human they future computerized and or gently encourage students, whether counseled or through parent they at least become familiar learners in by taking into account their learning modes and develop collaborative behaviors. Adaptive Human and eg.

VI.III Business Optimization

Contextual adaptive human and machine technologies real time and investigateassessing improvements in purpose, response, and limiting inputs in creating efficient, effective, and safe supportive systems. These offers service providers opportunities based on both mentioned actions with or without experts is think and depends on large analytic options.

VI.IV Responsible AI Development

As continue to identify purposes, we still as people must still view technology intelligently, as too, will fail developing unethical actions or products cause no-one across the successful and committed autonomous together decision making decisions ai will rapidly will and all pprocesses, and stupidly encourage untrained and mostly powerful displays of poor actions can either benefited or next round of improve.

VII. LITERATURE REVIEW

The progression of programming languages has been extensively examined, with a variety of researchers noting their historical changes and technological progress. For example, Sebesta (2019) highlighted how abstraction has enabled programming languages to become more accessible, while Aho et al. (2006) highlighted the importance of an up-to-date compiler design in programming language support. Although early programming languages such as FORTRAN and COBOL were key movements in the domain-specific computing age, IBM (2023) states that the move to object-



oriented languages and scripting languages significantly improved approaches to scalability and web interaction (Microsoft Research, 2023). The importance of programming languages is highlighted with surveys like that of Stack Overflow (2024) and TIOBE index, which provide contemporaneous trends of language popularity. There appears to have been a shift in popularity towards more recent programming languages such as Python and JavaScript, in addition to more recent languages such as Rust and Go. Taken together, these papers demonstrate changing aspects of computing technology that has provided a platform for programming languages.

VIII. RELEVANCE TO CURRENT RESEARCH

The field of programming language evolution is exceptionally relevant in today's digital age due to the growing complexity of software systems, rapid change in technology, and the emergence of AI, cloud, mobile, and security technologies that require developers to adapt to new languages and techniques. Understanding the history and evolution of programming languages is an essential frame of reference in assessing their relevance in today's context.

Modern technology is placing new pressures on programming practices, which can already be observed in innovative coding tools and AI-assisted coding tools (e.g., GitHub Copilot), low-code or no-code platforms, and domain-specific languages. Additionally, new technological paradigm shifts, such as quantum computing, introduce entirely new programming approaches and, therefore, are essential for researchers and developers to keep up to date with how programming languages are changing and evolving. This research on the history of programming languages and their evolution will continue to be valuable in understanding changes, developments, and potential future changes in programming languages within software engineering, developer education, and computational innovation.

IX. METHODOLOGY OF PROPOSED SURVEY

This study uses a qualitative and historical methodology for a comparative study of generations of programming languages. Secondary data was collected in the form of texts, technical documents, and reputable web-based sources including IEEE Spectrum, the TIOBE Index, and Stack Overflow Developer Surveys. The study classified programming languages into generations based on functionality, level of abstraction, and historical significance. Each generation was researched for its basic features, its effect on software development, and any impact in contemporary technology. The structured genesis of this paper provides the study with the opportunity to gain a better understanding of how languages have evolved and, therefore, create patterns that may assist with identification of shifting trends within programming.

X.CONCLUSION AND FUTURE WORK

While both human intelligence and artificial intelligence have amazing capacities, they both operate fundamentally differently. Humans have emotions, morals, creativity, and consciousness, none of which AI currently possesses. AI has the ability to perform tasks which require high speed, accuracy, and extrapolating from a large amount of information. As AI continues to be incorporated into the society in which we function it is important that we acknowledge that ability and be aware of the differences so that we ensure the technology complements human ability and does not replace it. Ethical use, transparency, and human control will be bench marks in honing AI into a tool humanity can use without losing the core values important to human relationships and human capabilities.

REFERENCES

1. Turing, A. M. (1950). Computing Machinery and Intelligence. Mind, 59(236), 433-460.

2. Russell, S., & Norvig, P. (2020). Artificial Intelligence: A Modern Approach (4th ed.). Pearson.

3. Bostrom, N. (2014). Superintelligence: Paths, Dangers, Strategies. Oxford University Press.

4. Floridi, L., & Cowls, J. (2019). A Unified Framework of Five Principles for AI in Society. Harvard Data Science Review, 1(1). https://doi.org/10.1162/99608f92.8cd550d1

5. Vincent, J. (2023). Generative AI in Music. Wired. https://www.wired.com/story/generative-ai-music/

6. Ahmed, N. (2022). Bias and Fairness in AI: A Survey. SpringerOpen Journal of AI Ethics. https://springeropen.com/articles/10.1186/2190-8532-1-14

7. MDPI. (2023). Exploring AI in Education and Ethics. Applied Sciences, 13(12), 7082. https://www.mdpi.com/2076-3417/13/12/7082

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(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

8. Sebesta, R. W. (2019). Concepts of Programming Languages. (12th ed.). Pearson Education.

9. Aho, A. V., Lam, M. S., Sethi, R., & Ullman, J. D. (2006). Compilers: Principles, Techniques, and Tools (2nd ed.). Addison-Wesley.

10. Kruse, R. L. & Ryba, A. J. (1999). Data Structures and Program Design in C (2nd ed.). Prentice Hall.

11. Stroustrup, B. (2013). The C++ Programming Language (4th ed.). Addison-Wesley Professional.

12. Wirth, N. (1976). Algorithms + Data Structures = Programs. Prentice Hall.

13. Pressman, R. S., & Maxim, B. R. (2014). Software Engineering: A Practitioner's Approach (8th ed.). McGraw-Hill Education.

14. Sommerville, I. (2016). Software Engineering (10th ed.). Pearson Education.

15. TIOBE Index. (2024). Programming Language Popularity Trends.

16. IEEE Spectrum. (2024). Top Programming Languages Ranking.

17. Stack Overflow Developer Survey. (2024). Most Loved and Used Programming Languages.

18. IBM. (2023). The History of Programming Languages.

19. Microsoft Research. (2023). Evolution of Modern Programming Paradigms.





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