RESEARCH FILE

AGENDA
AI & Academic Integrity

CONTENTS

WHAT IS AI?

Artificial intelligence, or AI, is the creation of computer systems that are capable of carrying out activities that ordinarily require human intellect. AI technologies can be grouped into four different categories:

1-Reactive Machines
2-Limited Memory
3-Theory of Mind
4-Self Aware

Reactive Machines-
This is the simplest level in the AI category. These are the machines that have easy inputs and outputs. The machine does not "learn" anything at this stage; it strictly follows the code that was used.

Limited Memory-
This AI is a little more complicated, and it has the ability to store or remember previous data. It uses that data to make better predictions or more accurate ones. Every machine learning model requires limited memory to be created, even if the model is a reactive machine type.

Theory of mind-
The third category of artificial intelligence, or the next level of AI systems, is called theory of mind. This kind of AI communicates with human thoughts and feelings. This AI will primarily focus on people whose brains may be influenced by a variety of circumstances, such as human understanding.

Self Aware-
AI capable of self-awareness is the last kind. At this point, machines will be able to understand their own feelings as well as those of others. Once self-aware AI is developed, we will have AI that is equivalent to human intellect, has awareness on the same level as humans, and shares their wants, desires, and emotions.

WHAT IS ACADEMIC INTEGRITY?

Academic integrity refers to the ethical principles and values that underpin the pursuit of knowledge, learning, and research in academic settings. It encompasses a range of behaviours and attitudes that uphold honesty, fairness, and responsibility within the academic community.

At its core, academic integrity involves a commitment to truthfulness, trustworthiness, and respect for intellectual property. It requires individuals to accurately represent their own work and ideas, properly acknowledge and cite the contributions of others, and adhere to the established rules and standards of their academic institution.

Key elements of academic integrity include:

1. Plagiarism: Academic integrity requires students and researchers to avoid presenting someone else's work, ideas, or words as their own without proper attribution. Plagiarism can take various forms, such as copying text from a source without citation, paraphrasing without giving credit, or submitting someone else's work as one's own.

2. Citation and referencing: Properly acknowledging the sources of information and ideas used in academic work is essential. This includes providing accurate citations and references for all external sources consulted, such as books, articles, websites, and other scholarly materials. Different citation styles (e.g., APA, MLA, Chicago) provide guidelines for consistent and appropriate referencing.

3. Collaboration and collaboration: Collaboration is encouraged in certain academic contexts, such as group projects or team-based research. However, it is crucial to understand the boundaries and expectations for collaboration set by instructors or institutions. Academic integrity requires individuals to contribute their fair share to collaborative work, respect intellectual property rights, and give credit where it is due.

4. Examinations and assessments: During exams and assessments, maintaining academic integrity means following the rules and instructions provided by instructors or examination boards. It involves refraining from cheating, unauthorised use of materials, or seeking external assistance unless explicitly permitted.

5. Originality and research ethics: Academic integrity extends to the realm of research. Researchers are expected to conduct their work with integrity, following ethical guidelines, and reporting their findings honestly and accurately. This includes obtaining proper permissions for research involving human subjects, avoiding fabrication or falsification of data, and maintaining transparency in reporting methods and results.

Promoting academic integrity is essential to maintain fairness, credibility, and the overall quality of education and research. Educational institutions typically have policies and codes of conduct in place to reinforce academic integrity, and they often provide resources and support to help students and researchers understand and practice it effectively.

THE IMPACT OF AI IN ACADEMICS TODAY

- AI is changing the way education systems are run and how teachers interact with students. With both positive and negative effects, they have made learning efficient, easier, and less time-consuming.
- A positive usage of AI is personalised learning platforms, which create study material and practise based on the individual student's strengths and weaknesses. An example of these platforms are Knewton and Carnegie Learning, which provide personalised feedback to students based on their performance and enhance their learning outcomes.
- Global Market Insights Inc. predicts that the AI education market could have a market value of $20 billion by 2027.
- The usage of AI in education has primarily risen since the COVID-19 pandemic, forcing both teachers and students to continue learning from home. This required teachers to come up with new methods of teaching, including using AI learning platforms.
- Edtech company Promethean surveyed teachers and learned that 86 percent thought AI should be an important part of education.
- Despite this, there are also negative impacts of AI on academics today. One example is that while AI can provide customised learning opportunities, there is a danger of becoming too dependent on algorithms and pre-defined methods. This could lead to an approach that ignores the particular learning requirements and preferences of different students.
- AI may not enable profound insight, but it can offer immediate and practical responses. Without fully comprehending the underlying concepts or processes, students may use AI tools to locate already-prepared solutions. This results in learning that is only superficial, allowing them to copy the correct responses without understanding the underlying ideas. As a result, their knowledge becomes limited and lacks the basis for further study and application.

CURRENT SOLUTIONS TO PREVENT ACADEMIC DISHONESTY DUE TO AI

In the education sector today, one of the largest conversations surrounding pedagogical practices is about good academic conduct. With AI-powered software like ChatGPT on the rise, academic dishonesty has become a major problem.

Are there any solutions to limit academic dishonesty?
The strategies proposed by instructors at the University of Chicago can be divided into three categories:

- **Technological Prevention**
- **Non-technological Prevention**
- **Creative Adaptation**

Technological Prevention:
A 22-year-old computer science student at Princeton named Edward Tian has introduced an AI detector named GPTZero, which claims to distinguish human and computer generated text with a higher degree of accuracy. There are other tools such as Turnitin that offer AI detection tools as well. The makers of ChatGPT are considering "watermarking" technology to indicate when a document has been generated by the software.

Non-Technological Prevention:
Some faculty and instructors at University of Chicago wish to neutralize ChatGPT completely. This entails: banning all computers in class; banning ChatGPT; monitoring essay-writing; or requiring writing assignments to be handwritten.
However, such measures may result in anxiety among the students about being under surveillance, accessibility issues with regards to handwritten work, or legal/ethical issues due to video proctoring.

Creative Adaptation:
There are also certain methods for professors to adapt to the fact that AI is here to stay, which include:
- **Clarify expectations at the outset:** Early on in the course, the professor should specify whether the use of AI tools is permitted.
- **Run prompts through ChatGPT:** May help to add nuance to draft.
- **Students can be asked to use current sources (post- September 2021)**
- **Have students emphasize original ideas and critical thinking as AI is known to be weak at critical thinking**

DOES AI STAGNATE HUMAN THINKING?

Lately, it has become an increasingly common misconception that artificial intelligence, AI for short, stagnates human thinking by invoking its potential negatives such as worker displacement, breach in personal privacy, etc. But in reality, AI is just a tool that helps enhance human thinking allowing us to uncover our hidden potential while simultaneously providing us with new perspectives that we haven't considered before.

Concerns about AI stagnating human thinking are based on the limited understanding of what AI can really do. While there may be a few risks associated with AI, there can be a lot of boons too like increased productivity and work efficiency, solutions to problems that may have been deemed as impossible to solve earlier, etc.

While AI does hold an upper hand over scholars and academics in a few aspects it still heavily lacks the creativity, intuition, and empathy that humans possess. It is a tool that can help assist us in solving problems and reaching our targets in ways we haven't thought of earlier, but at the end of the day it is only good academic conduct when used responsibly to supplement our academic pursuits.

AI can help tutor students by adapting to the student's needs and educating them in a way that is tailored to their respective attributes. This provides the students with a more comfortable source of information. By leveraging AI effectively in education, we can harness its potential to complement and enhance student thinking abilities, ultimately fostering a more effective learning environment.

Furthermore, the development of AI can help stimulate the human brain by presenting new opportunities and hurdles in the field of innovation. It can also help students develop their cognitive and critical thinking.

THE CONSEQUENCES OF INCREASING DEPENDENCY BY STUDENTS ON AI

Over the last few years, students have started using AI as their source of information and work. AI has become so easily available for students that they can easily access it, and there are no restrictions on it. This has let students rely on them highly. Due to this, the students face the following consequences:

- Reduced critical thinking skills: Relying too much on AI to provide answers can lead to a reduction in critical thinking skills among students. They may become accustomed to receiving immediate answers without questioning the sources or the reasoning behind them, which could hinder their ability to think critically in the future.

- Reduced creativity: AI systems are made to give precise, logical responses based on a set of criteria. Students that rely too much on AI can miss out on chances to exercise their creative problem-solving abilities and consider novel solutions.

- **Dependence excessively on technology:** Students who use artificial intelligence (AI) to complete activities like research, writing, or even decision-making may start to mistake it for human knowledge and skills. This could lead to a lack of respect for the role that people play in learning and making decisions.

- **Privacy concerns:** Many AI systems require access to personal data, such as search history or social media activity, to provide personalised recommendations or suggestions. If students become overly reliant on these systems, they may unintentionally expose their personal data to risks of misuse or exploitation.

- **Knowledge access restrictions:** Relying only on AI for information may result in a restricted understanding of the world. AI systems are frequently trained on predetermined datasets, which may not accurately represent the breadth of information or viewpoints. This could result in a limited comprehension of complicated problems or an inability to appreciate various points of view.

Overall, it is important to strike a balance between using AI as a tool to enhance learning and maintaining the essential human skills and knowledge needed for effective decision-making, critical thinking, and creativity.

SHOULD AI BE USED TO ASSIST STUDENTS WITH THEIR TASKS OR SHOULD ITS USE BE COMPLETELY BANNED FROM ACADEMICS?

For using AI to help students with their assignments:

- <u>Enhanced Efficiency</u>: AI can automate processes like planning and managing assignments, saving time and effort for students.

- <u>Personalisation</u>: Learning experiences that are adaptive and specifically suited to the needs of each student are possible with the help of AI-powered solutions.

- <u>Access to Information</u>: By assisting students in finding information and resources rapidly, AI helps speed up research and learning.

- <u>Improved Study Tools</u>: AI can offer teaching programmes, virtual assistants, and study tools that can help students comprehend challenging ideas.

Against using AI to help students with their assignments:

<u>Lack of Critical Thinking:</u> If students are forced to rely too heavily on automated answers, it may be difficult for them to develop their ability to think critically and solve problems on their own.

Artificial intelligence (AI) techniques may give speedy solutions without developing a thorough understanding of the underlying ideas, which could result in superficial learning.

<u>Limited Creativity:</u> Students may rely on established techniques and solutions when using AI-generated solutions, which may hinder original thought and creative problem-solving.

<u>Ethical Issues:</u> The application of AI in educational tasks poses issues with data security, privacy, and potential bias in algorithms.

While there are possible advantages of AI, such as increased productivity, personalised learning, and greater information access, there are also concerns about potential disadvantages, such as a lack of critical thinking, superficial comprehension, restricted creativity, and ethical dilemmas. It's critical to strike the ideal balance. When utilised as support only, AI can be a useful tool that enhances rather than substitutes for students' educational experiences. While still giving priority to the development of critical thinking, problem-solving abilities, creativity, and a thorough comprehension of the subject matter, it should be used to improve efficiency, provide personalised support, and provide additional resources.

CASE STUDY

Do you think AI like ChatGPT will have the same effect calculators did on academia, where it just made simple tedious tasks in an efficient manner to allow humans to conduct more advanced endeavours?

Over the last few decades, technology has advanced in several ways. Technology is intended to offload humans and help us to do tedious jobs such as calculators. Another technology that can complete tasks that ordinarily require complex and advanced human intelligence is artificial intelligence (AI). From the basic calculator to modern Artificial Intelligence (AI) technologies, advances in technology have made life simpler, quicker, and more effective. An artificial intelligence programme is far smarter than one inside a calculator. For instance, ChatGPT is a natural language processing tool driven by AI technology that allows you to have human-like conversations and much more with the chatbot.

The world has benefited significantly from the calculator's ability to perform calculations more quickly and accurately. Calculators have made it easier for many students to understand and apply difficult calculations and concepts in the classroom. Furthermore, some technological applications can help students solve problems without having to learn basic topics. Recently, students have started bringing devices to class other than calculators, such as smart watches, tablets, phones, and other gadgets that give them the ability to do much more than just calculate.

AI has developed over the last several years into a powerful tool that enables machines to think and behave like humans. AI tools are being used to analyze data on recruitment, admission, and retention, to support decision-making, and to assess productivity and performance. AI chatbots can speed up the preparation of lessons and resources, be helpful in providing students with ideas for their assignments, and assist students with disabilities and learning challenges. The ability of this technology to support each step of the academic process—from research and publication to writing and submitting assignments—could transform the academic world.

AI such as ChatGPT have become increasingly popular for their ability to generate human-like text and assist with various tasks. ChatGPT can assist academics in remaining competitive in their fields by allowing them to explore new topics and provide original content by synthesizing current data. However, these models might not always be accurate when it comes to mathematical calculations. The attempt to use ChatGPT to compute profit distribution ratios for a project is one real-world illustration of this problem. It took several tries to get ChatGPT to learn how to calculate the ratios correctly, but it was still difficult to get reliable results. In fact, the mistakes seemed to occur more frequently. This example highlights a significant difficulty when employing language models for complex mathematical calculations. Even though these models are very effective at producing natural language, they might not always be able to account for all the variables and conditions involved in a calculation. Users that depend on the model's output to finish their work may find this frustrating and time-consuming because it can result in errors and inconsistent outcomes. Despite these drawbacks, language models like ChatGPT still hold a lot of promise for helping with a variety of tasks and having a big impact on academia by streamlining tedious tasks and enabling researchers to concentrate on more complicated and important work.

Calculators are explicitly programmed for what they do. They are not, however, capable of making decisions and cannot be regarded as an AI device. On the other hand, artificial intelligence devices are smarter. They are capable of making decisions. AI devices, unlike calculators, are not explicitly programmed. Instead, they use their own internal intelligence to solve problems rather than following instructions from a programmer. Similar to how calculators ultimately proved to be an essential tool for studying mathematics, AI tools have the potential to revolutionise academic research and learning. Researchers can investigate new areas of study and produce findings with the help of AI that would not have been possible using traditional research methods.

In reality, AI is already in use everywhere, influencing everything. According to data, over the last four years, the use of AI in several business areas has increased by 270%. It will have significant effects on learning not only through providing direct assistance to individuals, but also by enabling educators to respond more quickly to the needs of learners and spend less time on mundane, repetitive tasks.

In conclusion, the resistance to artificial intelligence in academic work today and resistance to calculators in the past both indicate a fear of change and a desire to uphold traditional means of learning and scholarship. Although both calculators and artificial intelligence (AI) are tools that can help us complete jobs more quickly, they have various functions and are useful for different kinds of activities. While AI is better suited for complex data processing and decision-making tasks that require highly developed intellectual capacities, calculators are best used for mathematical calculations. AI tools have the potential to revolutionize academic research and learning, much as calculators eventually became a necessary tool for studying mathematics. However, the use of AI should not be viewed as a substitute for human intelligence or creativity. Instead, it should be seen as an instrument to improve human abilities and promote new discoveries and advancements. Ultimately, AI's effectiveness in academia will be determined by how well it is incorporated into the research process and how well it can assist and complement human intelligence.

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