AI – The good, the bad, and the scary

There is no denying that Artificial Intelligence has changed our lives.

However, some might argue if it's for the better.

- What do you believe the general perception towards AI is? Is it rather positive or negative?

INTRO

There is no denying that Artificial Intelligence has changed our lives. However, some might argue if it's for the better. A recent survey by Forbes indicated that many Americans still trust humans over AI by a large percentage. Those surveyed shared that they think people would do a better job of administering medicine, writing laws, and even choosing gifts, just to name a few. Here's what some experts from Virginia Tech College of Engineering had to say about AI– the good, the bad, and the (potentially) scary.

- What do you expect to read in this article?

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EXERCISE 1 - USE OF ENGLISH: PREPOSITIONS

Complete these statements from the article with the correct prepositions.

1. There is a potential risk of diminishing critical thinking skills if users depend too heavily _____ AI-generated content without scrutiny.
   A. on
   B. of
   C. to
   D. for
2. It sounds a bit scary to start relying _____ a piece of software to make decisions on our behalf, such as driving our car or performing a medical diagnosis.
   A. to
   B. at
   C. on
   D. for
3. LLMs are versatile support tools that people can tap _____ for brainstorming, practicing tough conversations, or even seeking emotional support.
   A. for
   B. to
   C. on
   D. into
4. AI can potentially allow a doctor to sift _____ complex data to make better informed medical diagnoses much quicker than they could traditionally.
   A. through
   B. across
   C. about
   D. into
5. AI can lead _____ more accurate forecasts of project costs and schedules, helping the industry be more productive and efficient.
   A. in
   B. for
   C. to
   D. at

- Do you agree with the previous statements on the advantages and dangers of AI? Discuss them with a partner.

EXERCISE2 - VOCABULARY: IT COLLOCATIONS

Match the two halves to create phrases.

1. train	A. green, sustainable algorithms
2. parse	B. through billions of data points
3. set	C. representative data
4. provide	D. a human detection algorithm
5. design	E. guardrails

➡ *Now use these phrases to complete sentences 1-5. Make sure to use the right verb forms.*

1. AI-endowed devices can _____ in a few milliseconds.
2. If the designers _____ , the resulting AI systems become biased and unfair.
3. If you _____ and only show the algorithm images of people with blonde hair, that system may fail to recognize a user with brown hair.
4. It is crucial that we discuss how _____ and ethical standards for the deployment and use of LLMs.
5. We are faced with an important challenge of _____ that can work with minimal environmental impact

Dylan Losey - Assistant Professor, Mechanical Engineering

The Good: improved accessibility and quality of life

"**AI and robotics can open doors for** people living with physical disabilities. We've seen the promise of assistive robot arms and mobile wheelchairs helping elderly adults regain independence, autonomous vehicles increase mobility, and rehabilitation robots help children gain the ability to walk. **The promise of this technology is** a higher quality of life for everyday users."

The Bad: potential bias from incomplete data

"AI is a powerful tool that can easily **be misused**. In general, AI and learning algorithms extrapolate from the data they are given. If the designers do not provide representative data, the resulting AI systems become biased and unfair. For example, if you train a human detection algorithm and only show the algorithm images of people with blonde hair, that system may fail to recognize a user with brown hair (e.g., brown hair = not a human). In practice, rushed applications of AI have resulted in systems with racial and gender biases. The bad of AI is a technology that does not treat all users the same."

The Scary: Artificial intelligence is influencing our decision making

"We are already facing **the negative outcomes of** AI. For example, take recommendation algorithms for streaming services: the types of shows you see are influenced by the shows recommended to you by an artificial agent. More generally, today's AI systems influence human decision making at multiple levels: from viewing habits to purchasing decisions, from political opinions to social values. To say that the consequences of AI is a problem for future generations ignores the reality in front of us – our everyday lives are already being influenced. Artificial intelligence – in its current form – is largely unregulated and **unfettered**. Companies and institutions are free to develop the algorithms that maximize their profit, their engagement, their impact. I don't worry about some dystopian future; I worry about the reality we have right now, and how we integrate the amazing possibilities of artificial intelligence into human-centered systems."

Eugenia Rho - Assistant Professor, Department of Computer Science

The Good: Improved communication with machines

"Large language models (LLMs) are transforming our interactions with technologies. Their capacity to parse and generate human-like text has made it possible to have more dynamic conversations with machines. These models are no longer just about automating tasks — they are versatile support tools that people can tap into for brainstorming, practicing tough conversations, or even seeking emotional support. Imagine having a resource — not quite a friend but a helpful tool — ready to assist when you need insights or a different perspective. These models are starting to bridge gaps in areas we traditionally reserved for human touch, but it is important to remember they are still tools, not replacements."

The Bad: Increased dependence on technology reduces critical thinking

"With the power of LLMs comes the inherent challenge of managing our reliance on them. **There is a potential risk of** diminishing critical thinking skills if users depend too heavily on AI-generated content without scrutiny. Also, as these models are trained on vast amounts of internet text, they might unknowingly propagate **biases** present in their training data. Therefore, it is imperative that we approach the adoption of LLMs with a balanced perspective, understanding their subsumed biases and risks and ensuring that they complement human intelligence rather than replace it."

The Scary: Potential loss of human connection

"**One of the deeper concerns surrounding** LLMs in human-AI interaction **is** the potential erosion of genuine human connection. As we begin to converse more often with AI, naturally there is a question over the authenticity of our interactions. Will we, over time, prefer the consistent and tailored responses from an LLM over the unpredictable, messy, spontaneous, but genuine nature of human conversation? Moreover, **there is the ethical concern of** AI being used to manipulate or deceive, given its ability to generate convincing narratives. Hence, it is crucial that we discuss how to set guardrails and ethical standards for the deployment and use of LLMs, ensuring they are used to enrich our lives rather than diminish the essence of human connection. While LLMs bring challenges, they also offer unprecedented opportunities. It is up to us to harness their capabilities responsibly."

Ali Shojaei - Assistant Professor, Myers-Lawson School of Construction, Building Construction

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The Good: Revolutionizing the built environment

"**AI has provided advantages and benefits** not seen before, from the optimization of construction processes and productivity to improving safety protocols and advancing sustainable practices. **It can lead to** more accurate **forecasts** of project costs and schedules, helping the industry be more productive and efficient. These technologies not only save time, but also potentially save lives by minimizing human error and ensuring a safer working environment. In addition, automating repetitive tasks in design, planning, and management with AI frees up human workers to focus on more complex and creative aspects."

The Bad: Growing pains

"The integration and adoption of AI in real-world settings can be complex and create unwanted outcomes as we pave our way forward. For example, the environmental impact and energy consumption of AI cannot **be overlooked**. Data privacy and security **are also valid concerns** with the increased use of AI and automation of sensitive information. As with any technology, AI risks being implemented as a buzzword or **silver bullet** solution by those without expertise which can lead to poor results. It is necessary to ensure that as AI and automation systems evolve, that they do so sustainably and ethically."

The Scary: Ethical considerations and workforce implications

"With increased automation, people are nervous about job displacement. For instance, if drones and automated systems can oversee construction sites, or if AI-enhanced virtual reality can conduct site visits, what becomes of the human workforce traditionally involved in these tasks? While AI promises efficiency and precision, it's essential to consider the human element – the workers whose roles might become obsolete. As AI makes some tasks redundant, **it also opens doors to** new roles and opportunities. Just as AI might reduce the need for manual site inspections, it can also create demand for AI specialists, digital twin architects, and smart contract developers."

Walid Saad - Professor, Electrical and Computer Engineering

The Good: Endless applications

"Many of tomorrow's technologies, from 6G to drones, driverless cars, and the metaverse, require instilling autonomous decision making across millions of internet-connected devices. By default, such systems and environments are very complex to operate, and rely on massive volumes of data that are too big to sift through. This makes it very difficult to deploy them in the real-world, and reap their broad societal benefits in terms of enabling smart cities and accelerating automation across multiple industries. Fortunately, AI-endowed devices can parse through billions of data points in a few milliseconds, a task that would otherwise require decades for a human operator to perform. This then has the potential to create real-time control at-scale while enabling automation 'in the wild'.

AI also paves the way towards unimaginable applications that can better our day-to-day life by enhancing the way in which we communicate, conduct business, and navigate the world. **Sectors that can benefit from automation range from** transportation to healthcare, telecommunications, agriculture, production, and even entertainment. Technologies that we take for granted now, like home assistants, recommendation systems (e.g., those we see in YouTube or Netflix), or robotics, could not have been possible without AI, and we will continue to see them evolve further as the power of AI improves."

The Bad: A large carbon footprint

"Unfortunately, AI may have its own carbon footprint and negative environmental impact because it relies heavily on computing at data centers. Those data centers consume a large amount of electricity, and also require a significant amount of water for cooling purposes. Therefore, **we are faced with an important challenge of** designing green, sustainable AI algorithms that can work with minimal environmental impact. It's important for us to start quantifying this impact, and to start thinking of solutions (e.g., new algorithms, etc.) that can slash the electricity bill of AI and tame its environmental impact."

THE SCARY: JOB SECURITY

"Just like with every technology early on in its development, it would have its own **drawbacks**, and it might look very scary to the uninitiated. Take the example of the Internet, back in the early-to-late nineties; many consumers were probably wary of buying a home appliance or even a book from a website – a technology that could have looked like science fiction to the average American at the time. Today, the vast majority of our purchases are done online; this includes critical decisions like buying a new home or a new car. I foresee a similar trend with AI. It sounds a bit scary to start relying on a piece of software to make decisions on our behalf, such as driving our car or performing a medical diagnosis. **This raises the question of whether** AI might begin to replace real jobs like a driver or a doctor. In relation to jobs, we should view AI as an assistant to doctors, not a replacement. For instance, AI can potentially allow a doctor to sift through complex data to make better informed medical diagnoses much quicker than they could traditionally. Similarly, even though AI may indeed threaten some jobs, it will also help create new jobs that we perhaps cannot even define today."

READING COMPREHENSION 1 - VOCABULARY

Match the following words found in the article with their definition.

1. bias
2. a silver bullet
3. overlook
4. forecast
5. misuse
6. unfettered

A. inclination or prejudice for or against one person or group
B. to use something wrongly
C. not restricted, uncontrolled
D. a simple solution to a complicated problem
E. a statement of what is expected to happen in the future
F. to fail to notice or consider something

VOCABULARY - Expressing advantages and disadvantages

Look at these phrases for expressing advantages and disadvantages and put them in the correct columns.

There is a potential risk of…

It paves the way towards…

The downside of [relying on AI] is…

This raises the question of whether…

A significant drawback [of AI] is…

Sectors that can benefit from [automation] range from…

We are faced with the challenge of…

One of the strongest arguments in favor [of AI] is…

An argument against [widespread AI adoption] is…

We're facing the negative outcome of…

One of the deeper concerns is…

The main advantage of [this technology] is…

The promise of [this technology] is…

A key upside is…

It opens doors to…

It provides the benefit of…

ADVANTAGES	DISADVANTAGES AND RISKS

READING COMPREHENSION 2

Who holds the following opinions? There is more than one answer possible.

	Dylan Losey	**Eugenia Rho**	**Ali Shojaei**	**Walid Saad**
1. AI makes it possible to enhance the lives of its users on a daily basis.				
2. The environmental impact of AI is a serious cause of concern that cannot be ignored.				
3. While AI might make some jobs superfluous, it will also allow for new career opportunities.				
4. One of the dangers of AI systems is that, if they are not trained properly, they might spread biases.				