Team Byte Me:

- Andrew Kuruvilla
- Igor Lucic
- Rayyaan Haamid
- Tales Araujo Leonidas

Professor Patricia McManus
ITAI 1378: Computer Vision
May 06, 2024

Reflections and Innovations Inspired by the Fireside Chat: Capstone Project

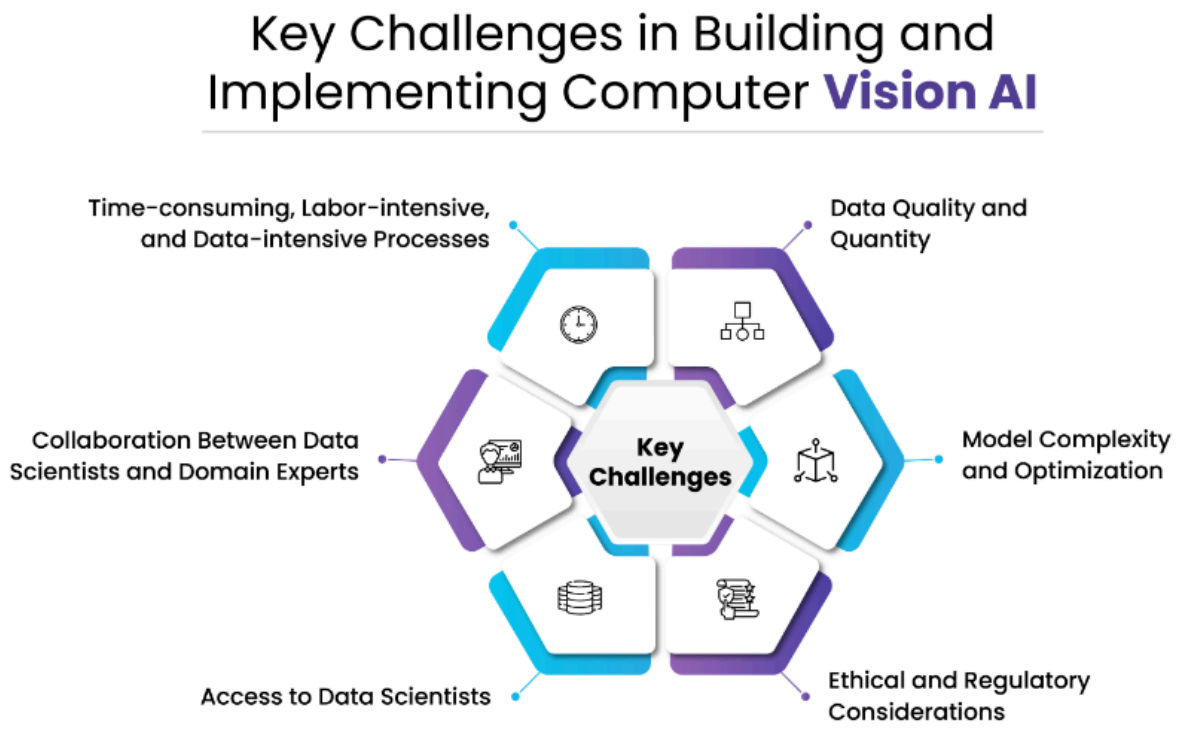
Introduction

On the last day of class, we had the privilege of participating in a fireside chat with two highly influential guest speakers, Dr. Dimitri Kusnezov, Under Secretary for Science and Technology, and Ms. Noelle Russel, “a multi-award-winning technologist who has led teams at NPR, Microsoft, IBM, Accenture, AWS and Amazon Alexa” (NoelleRussell.ai, 2024). We aim to summarize the guests' discussions during the chat, take the hook to investigate some challenges of AI applications in public safety and address possible solutions by taking ethical concerns into account.

AI Applications and Challenges in Public Satefy

The initial subject of the chat began with the prevalent societal fear of artificial intelligence (AI), particularly regarding AI acquiring sentience. This topic led to the question of AI being regulated or restricted due to its capabilities, which is a delicate matter that could take people away from this technology. Following the discussion, we explored some real-world applications by the government, such as combating human trafficking and money laundering schemes operated by criminal organizations. This inspired our choice to research computer vision applications for public safety. However,

the challenges can be diverse, as pictured by Cogent Infotech in the following image.



Solutions

Building on the challenges discussed, a promising approach for AI application in public safety emerges in finding missing persons. By utilizing advanced computer vision and facial recognition technologies, AI can be deployed to analyze footage from surveillance cameras to detect and track individuals who have been reported missing. It enhances the ability to locate people quickly and supports continuous monitoring efforts without requiring extensive manpower.

Moreover, leveraging the capabilities of generative adversarial networks (GANs), AI can also aid in generating age-progressed images of missing persons. These generated images can predict how individuals might appear several years after their disappearance, providing crucial updates to public databases and helping law enforcement and families in ongoing search efforts.

Ethical Considerations

The most important subject talked during the chat was ethical concerns going forward with A.I. Although a lot of us are interested in the dawn of the new age of A.I.

and the exciting possibilities of what it can bring forward, it is always important to be cautious. One big point to focus on is security. As it stands today, the US is leading the world in A.I. development. The question is how can we hold onto this title, but making sure A.I. has some oversight? Luckily, the Biden administration has made history back in October by signing the first executive order around the development of A.I. These are “soft” guardrails in order to limit bad actors, but should limit stifling development.

Another point brought up was data. AI systems often collect a lot of data, sometimes without people's explicit knowledge or consent. There are concerns about how this data is stored and secured from unauthorized access. There are reports of the next GPT model training using every available book, website, newsletter and more to develop it. How can we ensure the next model can be trained without jeopardizing sensitive or personal content?

A last point is the rise of prompt injections. AI systems themselves can be vulnerable to hacking or manipulation. Malicious actors could exploit these vulnerabilities to steal data, disrupt operations, or even cause harm. How can we better protect information from bad actors? Is it possible? Or will we always be a cat and mouse game?

Conclusion

In conclusion, the fireside chat enriched our understanding of AI's potential in various sectors, including public safety, and foregrounded the essential interplay between technology, ethics, and regulation. As we reflect on the insights shared by Dr. Dimitri Kusnezov and Ms. Noelle Russel, it is clear that while AI offers transformative solutions, such as tracking missing persons and generating age-progressed images, these advances come with significant responsibilities. We must navigate the ethical issues and security risks associated with AI deployment, especially in sensitive areas like public safety. It is important that we continue to engage with these challenges, ensuring that AI development is aligned with societal values and contributes positively to community safety and well-being.

Works Cited

Cogent Infotech. “6 Challenges for Organizations Building Computer Vision Models.” *Cogent Infotech*, 2024, https://www.cogentinfo.com/resources/6-challenges-for-organizations-building-computer-vision-models. Accessed 2024.

NoelleRussell.ai. “About Noelle.” *NoelleRussell.ai - AI Executive Leadership Education, Public Speaking*, 2024, https://noellerussell.ai/.

The White House. “Fact Sheet: Biden-Harris Administration Announces Key AI Actions Following President Biden’s Landmark Executive Order.” *The White House*, 29 January 2024, https://www.whitehouse.gov/briefing-room/statements-releases/2024/01/29/fact-sheet-biden-harris-administration-announces-key-ai-actions-following-president-bidens-landmark-executive-order/.