

# Machine Learning in Practice

Michael Hylton, River Stepp, Jamari Hairston



Choose **Ohio** First

## ABSTRACT

With the rise of artificial intelligence within our society, it is an important time to analyze the key aspects of AI, as well as machine learning. In our project, "Machine Learning in Practice" we focus on the multiple facets of machine learning and compile various works of research to help break down how machine learning impacts each of us. We dive into how Machine Learning is currently being used and how effective it is while also exploring potential future applications based on current trends and development goals with machine learning. We explore the current and future social impacts of implementing machine learning into society, and how it affects you and me. Part of our research is to help address the problems that might arise before they occur.

## INTRODUCTION

Machine learning is becoming increasingly prevalent to modern technology, and its growing at a rapid rate. Without even realizing it, we utilize machine learning on a daily basis via Alexa, Google maps, Siri, etc. It's crucial to examine the main facets of AI since they are becoming more prevalent in society.

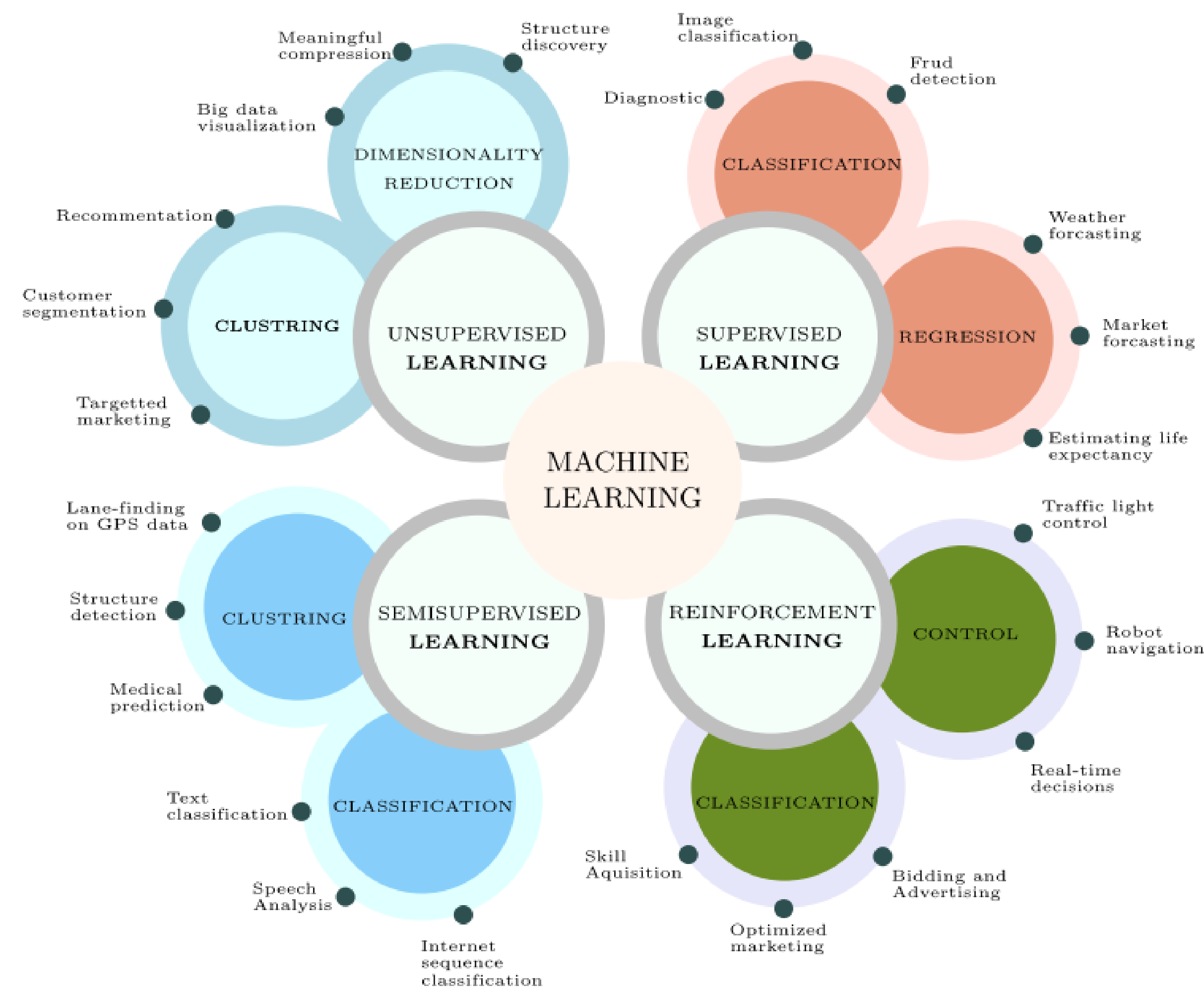


Figure 1. A panoramic view of Machine Learning and its applications.

## METHODS

- We utilized the Institute of Electrical and Electronics Engineer's research database for our research, as well as various other sources found using Google.

## OBJECTIVES

We explore potential future applications based on current trends and the development of machine learning goals. Also tackling how often it's being used and the effectiveness of it. We look at how integrating machine learning into society has and will continue effecting people like you and I. Preventing potential issues arising is the goal of our research

## RESULTS

- The main applications of machine learning stem from image recognition, medical diagnosis, virtual personal assistants, personalized social media and speech recognition.
- Machine learning is constantly evolving at a rapid rate, while the use of it becoming almost a staple in today's society and culture.
- Quantum Computers are a powerful technology that could be the key to unlocking much stronger AI

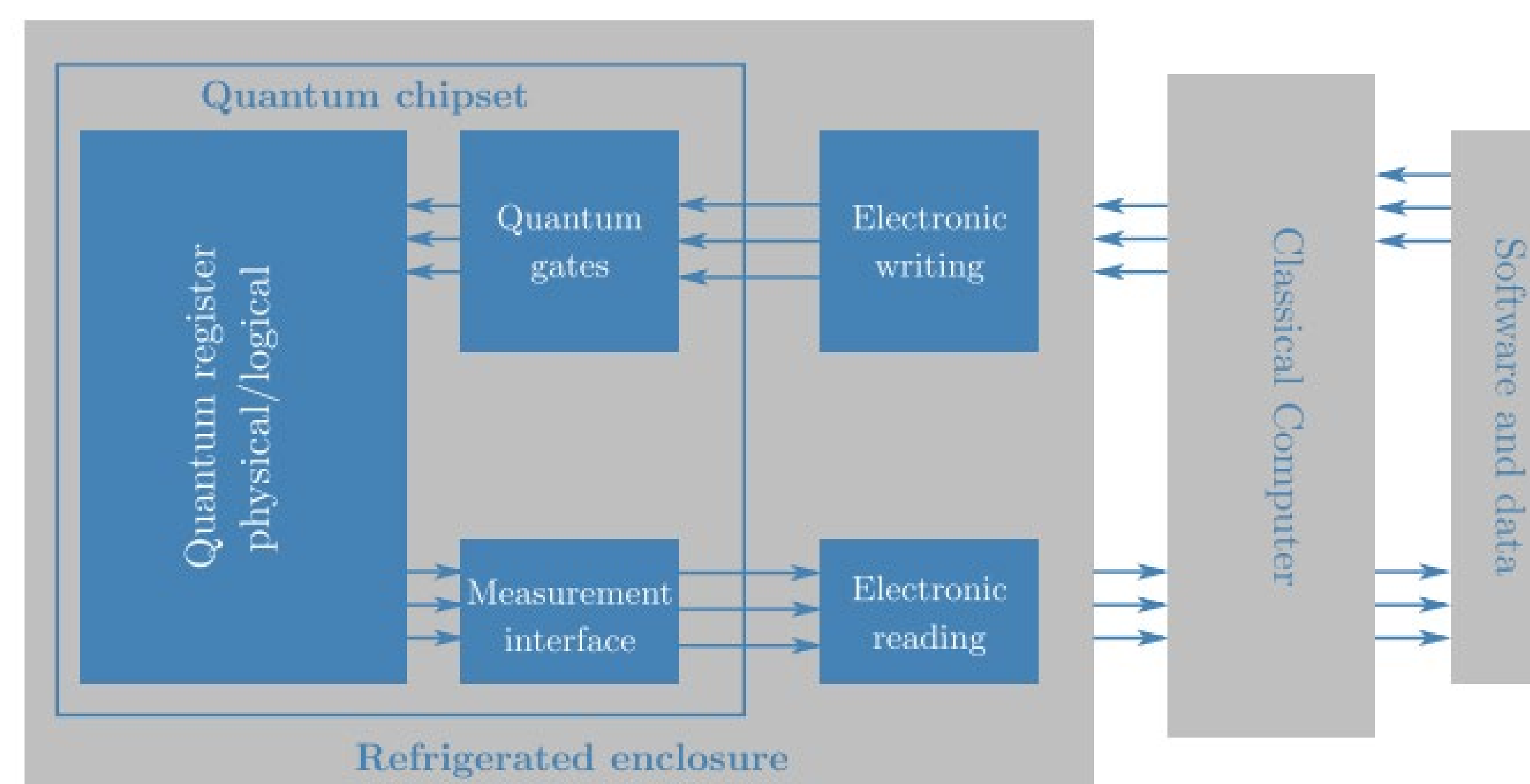


Figure 2. Global architecture of a quantum computer.

- Machine Learning can drastically improve Healthcare, Manufacturing, and Autonomous Vehicles.
- Technologies using machine learning techniques are unlikely to replace human beings in the workforce and will instead create jobs.
- Technologies using machine learning raise a lot of ethical concerns, but systems are being developed to address these concerns.

Technology	Pros	Cons
Deepfakes	Higher quality movie dubbing	Harassment, misinformation, etc.
Speech Synthesis	Better TTS, increased accessibility, etc.	Social engineering and scamming
GPT-3	Increased productivity and creation of class materials	Academic dishonesty, plagiarism, etc.
Machine Learning in Job Automation	Increased quality and quantity of products produced, and an increase in total jobs available.	Could destroy jobs in some sectors.

Figure 3. Pros and cons of certain applications of machine learning



Figure 4. Examples of generated face frames.

## CONCLUSIONS

Technologies that utilize machine learning are improving rapidly and are used in a variety of professions. Machine learning technologies will likely mediate many aspects of an individual's life in the future. Machine learning is likely going to be the next form of disruptive technology. While there are many concerns around developing machine learning technologies, the technologies will likely bring about more opportunities than burdens.

## FUTURE WORK

There is large amounts of advancements to be had within the Machine Learning Field. There is much more well focused work to be done in everything from the efficiency of AI to ensuring academic integrity.

## References

- Cotton, Debby, et al. "Chatting and Cheating. Ensuring Academic Integrity in the Era of Chatgpt." 2023, <https://doi.org/10.35542/osf.io/mrz8h>.
- Iyer, Sidharth. "How Ai Virtual Assistant (AI Assistant) Empowers Users [2023]." *Aisera*, 25 Mar. 2023, <https://aisera.com/chatbots-virtual-assistants-conversational-ai/>.
- Jaiswal, Gaurav. "Hybrid Recurrent Deep Learning Model for Deepfake Video Detection." *2021 IEEE 8th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON)*, 2021, <https://doi.org/10.1109/upcon52273.2021.9667632>.
- Khan, Tariq M., and Antonio Robles-Kelly. "Machine Learning: Quantum vs Classical." *IEEE Access*, vol. 8, 1 Dec. 2020, pp. 219275– 219294., <https://doi.org/10.1109/access.2020.3041719>.
- Meskys, Edvinas, et al. "Regulating Deep Fakes: Legal and Ethical Considerations." *Journal of Intellectual Property Law & Practice*, vol. 15, no. 1, 2020, pp. 24–31., <https://doi.org/10.1093/jiplp/jpz167>.
- Sokolov, Sergey S., et al. "Modern Social Engineering Voice Cloning Technologies." *2020 IEEE Conference of Russian Young Researchers in Electrical and Electronic Engineering (EIConRus)*, 2020, <https://doi.org/10.1109/eiconrus49466.2020.9038954>.
- Zhydik, Olha. "What Does the Future of Machine Learning Look like?" *ELEKS*, 19 Oct. 2022, <https://eleks.com/blog/future-of-machine-learning/>.

## Acknowledgments

Dr. Jianping Zhu – Advisor for our project