

Report Submission

CON101- Introduction to Computer Science and Engineering

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1 Introduction

Machine Learning has started playing a very important role in everyone's life. Be it image filters, legal proofs, data processing and advanced things like cancer detection, terrorist detection by face recognition.

As we all are aware of that Data is the new oil and the fact that good trained machine learning model is backed by strong dataset.

“With great power comes great responsibility”. Many experts suggests that ML models and outcomes a lot of "fairness" issues embedded in them.

2 Analysis of case studies

The case studies described in the pdf reflects the various domains where machine learning is being used. Along with that, it also reflects the human bias and social divide getting transferred into machines.

For example, in street bump project the data collected was mostly from cities and lesser from villages that was clearly showcased the social disparities between cities and villages.

2.1 Concerns regarding machine learning

1. Recently an African was recognised as a gorilla by face recognition which raise a lot of concerns of racism getting transferred from humans into technology.
2. Health insurance price raised up after predicting diseases, bad habits (smoking, drinking etc.) though ML.
3. Improper handling of the dilemma of self-driving car to hit a child, lady or a stray dog in a situation when it cannot stop due to technical glitch.
4. AI winning against world champions in games like chess also ruins the beauty of the player and sometimes the game as a whole.

2.2 Other social and security issues

1. **Security issues.** If many predictions are made by CV in future (for example detecting cancer cells), its security would require even more robustness.
2. **Privacy issues.** Considering the example of self-driving cars that have cameras and sensors all around to use image processing. Presence of such things would kill the privacy of the individual and others nearby.
3. **Mass unemployment.** This is more of administrative problem than technical. But we can't deny the fact that AI will eat up a lot of jobs that require "labour work" so far.

2.3 Steps for improvement

1. Administrative cap over the technological use of AI in image processing.
2. Including all walks of people in research related to machine learning to reduce racism, sexism etc. getting transferred to technologies.
3. Proper consent of individual before accessing/processing their data general.

3 Takeaway message/Conclusion

1. ML and AI are very latest and "young" technologies having a lot of potential and scope for betterment of society and technologies. Many NP type problems could find their solution through AI.
2. Similar to the fact that chemical researchers don't blindly make chemical weapons and misuse them. This is because they understand their responsibilities. In the same way, computer scientists should realise their moral responsibilities.
3. Also, ethical problems should not slow down the research development in the field of machine learning.