Biomedical
Engineering
Society
University of Texas Chapter

BMES CASE COMPETITON

FALL 2023

OBJECTIVE:

Design and present a solution to ease the tension between artificial intelligence and bioethics while weighing the issues of accountability, bias, confidentiality, and decision-making with the immense potential of this technology. Construct your solution with regards to the current domain of artificial intelligence as it pertains to patient privacy and various sectors of health as well as any proposed constraints, expansions, and/or regulations. Perhaps consider how your solution could incorporate tailored and personalized care, efficient drug discovery, better assistive and mental/behavioral health support, responsive emergency care, more effective detections of disease or insurance fraud, and/or better aggregate models of the development of disease (both the prognosis for an individual and the spread of disease in a population). Keep in mind the economic, social, and ethical issues that may arise as a result of your solution. Consider a feasible solution that can be efficiently implemented and be sure to include how it will be financially and ethically sustainable during its effective time period and as artificial intelligence continues to progress. Additionally, discuss why your novel idea is more effective than previous solutions to this problem. Be prepared to refute any potential arguments against your solution.

Your solution can include but is not limited to: creating or modifying a biomedical device, technological application, biopharmaceutical solution, medical solution (e.g. a surgical application), social change, or policy change, etc. to best address the rise of artificial intelligence and bioethical concerns.

Background

In the 21st century, as medicine and health continue to evolve, the ever-growing presence of Artificial Intelligence has made the field more challenging to adapt with bioethical standards put in place. Artificial intelligence has shifted the way people think about various fields of study, but AI will bring about far reaching changes to the health and medicine field. The integration of AI technologies in the healthcare setting has the potential to revolutionize patient care, disease identification and prevention. Although there are many examples of AI's revolutionary capabilities in the health field, it has simultaneously introduced a host of ethical problems that should be considered. Issues including managing patients' data and privacy are all problems that need to be solved to ensure that data isn't being used for other motives. Accordingly, AI should be used responsibly by professionals to aid the creation of breakthrough technologies, while limiting the cons that are introduced which go against bioethics.

Potential Applications

COVID-19 Pandemic

A recent example of AI being used in health is the COVID-19 pandemic. Various vaccine manufacturers such as Pfizer and Moderna utilized AI to run machine learning algorithms to identify which parts of the virus's spike protein was being mutated, therefore expediting the process of creating boosters.

Facial Recognition

Facial Recognition Technology (FRT) is a promising medical software for the future of healthcare. FRT maps a person's facial characteristics and stores their data as a face template. FRT can assist physicians by helping diagnose genetic disorders by judging facial morphology. Other hopeful future abilities for FRT are the ability to predict health characteristics like aging, predicting pain and emotions by facial expressions, and monitoring medication adherence. Despite all of these positives, there is a question of ethics when it comes to FRT. Security, privacy, and patients becoming anonymized, can all come about by the rise of FRT.

Summary

A successful presentation will include an innovative solution to the problem at hand, thorough research of the solution, a plan to implement the solution that includes a thorough understanding of the risks and rewards, potential pitfalls, opportunities for further development, relevant financial information such as business development, marketing, funding and expenses, etc., and the long-term impact of the proposed solution in an organized and aesthetically pleasing presentation.

Competition Day

The competition will be held on Saturday, December 2, 2023, at 9 am. Teams will be notified of their presentation times beforehand. Each team will have 15 minutes for their presentation, 10 minutes to present their solution and 5 minutes to answer questions from the judges. Dress code for presenters is business professional.
The 1st place team will be awarded $350. The 2nd place team will be awarded $250. The 3rd place team will be awarded $150.
****prizes are subject to change****

Criteria

Idea:
❑ Novel
❑ Creative
❑ Practical

Implementation:
❑ Net Positive Impact
❑ Minimal Ethical and Cultural Effects
❑ Economic and Technical Feasibility

Proposal:
❑ Business Plan for Implementation
❑ Relevant Financial Information
❑ Long-term Effects

Quality of Presentation:
❑ Neat and Organized
❑ Smooth Transitions
❑ Contains all necessary information

if you have any questions, please contact:
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