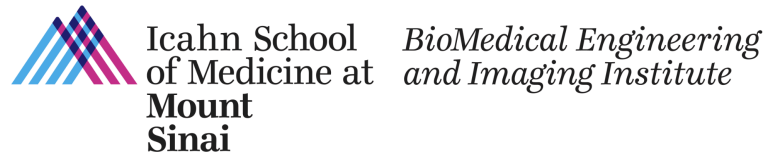


AI-Assisted Digital Tumor Board

Fachgebiet Digital Health - Machine Learning

Project Partner:



Project Overview:

The goal of this Bachelor project is to develop an AI-assisted digital tumor board platform. This project aims to enhance how multidisciplinary teams discuss and plan treatments for cancer patients by providing a secure, collaborative, and intelligent platform for sharing and analyzing patient data.

What is a Tumor Board?

A tumor board is a multidisciplinary team of medical professionals, including oncologists, radiologists, pathologists, surgeons, and other specialists, who come together to review and discuss complex cancer cases. The objective is to collaboratively develop the most effective treatment plan for each patient. However, preparing for a tumor board meeting involves considerable manual labor, such as creating PowerPoint presentations that are not shared before the meeting.

Consequently, participants are unable to thoroughly prepare or review other relevant data as they are preoccupied with slide preparation. Implementing a digital platform can alleviate this burden by allowing data to be shared among board members in advance, thus enabling participants to be better prepared for the meetings.



Project Objectives:

1. Development of a Secure Collaborative Platform:

- Design and build a digital tumor board similar to platforms like Miro or Google Docs.
- Ensure the platform is secure for handling Protected Health Information (PHI).

2. Integration with Existing Medical Databases:

- Pull data from Mount Sinai's existing databases, including:

- Electronic Health Records (EHRs).
- Medical imaging data from PACS (Picture Archiving and Communication System).
- Enable the querying of past patient data to find similar cases for reference.

3. AI-Assisted Tumor Grading:

- Implement an AI-assisted expert system to assist and automate tumor grading processes.
- Enhance decision-making through data-driven insights and recommendations.

Expected Outcomes:

By the end of this project, students will have developed a robust digital tumor board platform that facilitates seamless communication and collaboration among medical professionals. This platform will significantly improve the efficiency and accuracy of treatment planning for cancer patients at Mount Sinai.

Learning Outcomes for Students:

- Technical Skills:

- Gain hands-on experience with web application development.
- Learn about the ethical and regulatory aspects of handling patient data.
- Learn to integrate complex medical databases.
- Develop and implement AI algorithms for medical applications.

- Collaboration and Communication:

- Work closely with medical professionals from various disciplines.
- Develop project management skills through real-world project timelines and deliverables.
- Enhance teamwork and collaboration skills by working in a diverse team environment.

- Healthcare Industry Insight:

- Gain an understanding of the healthcare industry and the specific challenges involved in managing and analyzing medical data.
- Learn about regulatory requirements and best practices for handling sensitive medical information.

Project Phases:

1. Research and Planning:

- Co-development with medical professionals.
- Conduct a thorough analysis of existing tumor board processes and requirements.
- Define project scope, deliverables, and milestones.

2. Platform Design and Development:

- Design the architecture of the digital tumor board.

- Develop the platform, focusing on security, usability, and integration with existing databases.

3. AI Integration:

- Implement AI tools for tumor grading and data analysis.
- Train and validate AI models using historical patient data.

4. Testing and Deployment:

- Conduct rigorous testing to ensure functionality, security, and compliance.
- Demonstrate and test the platform at Mount Sinai together with medical staff.

5. Evaluation and Iteration:

- Collect feedback from users and make necessary improvements.
- Ensure the platform meets all user requirements and enhances the tumor board process.

If you are interested in the project and want to learn more, feel free to reach out to the project supervisors.

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