Requirements & Engineering Standards Lightning Talk

PROBLEM STATEMENT

We are trying to solve problems within the diagnosis of skin cancer. We will do this by learning AI and cloud computing in order to create an AI model that will be able to detect skin cancer cells. The AI model will be trained using real images from medical institutions. The purpose of this project is to help doctors quickly diagnosis skin cancer for their patients.

REQUIREMENTS & CONSTRAINTS

Functional requirements:

- Web Interface to access model
- Ability to access model from around the world
- Able to input images to receive results

Resource requirements:

- Google or AWS cloud environment
- Access to the data required to create a cancer model
- High power GPU computer

Qualitative aesthetics requirements:

- The model should follow a consistent design pattern in terms of UI

Economic/market requirements:

- The project should take zero funding to make (constraint)

REQUIREMENTS & CONSTRAINTS

UI requirements:

- Interface that is easy to use and navigate

Performance requirements:

- Model is able to output results within seconds or little to no delay

Legal requirements:

- Ensuring that the photos provided from medical institutes are acceptable to use.

Maintainability requirements:
- The model should be able to gracefully degrade as it gets more advanced and should continually upgrade itself as it learns more through its neural network.

Testing requirements:
- Make sure model runs as intended and is able to give accurate results

ENGINEERING STANDARDS

Standards:

- IEEE 730
    - This is a software project and therefore should adhere to typical software quality assurance processes, similar to those laid out in IEEE 730.
- IEEE 828
    - We will need to follow the minimum requirements for Configuration management within our project.
- IEEE 29148
    - There will be various development stages required in order to create our model, IEEE 29148 talks about the provisions and requirements for these different stages.
- IEEE 1012
    - We'll need to be able to identify whether or not the given problem (detecting skin cancer) was able to be solved by our software as well as the consumer using it has their problem solved.
- IEEE 16326
    - Since this is a group project it'll be important to identify key points in relation to project management, specifically planning, monitoring, quality management, documentation, etc.

ENGINEERING STANDARDS (CONT.)

- IEEE 24748
  - Since the project will have a user interface for non-expert audience, it will require documentation or a tutorial.
- ISO/IEC 29119
  - Since the software project involves A.I, rigorous testing will be needed to both train and test the A.I. Therefore, great documentation and testing standards are needed.
- Google or AWS Cloud Environment
  - Cloud computing will help run the software project
- Python Language
  - Almost all A.I. libraries are in Python.

INTENDED USERS AND USES

- Who our project benefits?
  - Patients with Skin Cancer
  - Doctors who are trying to diagnose
  - Patients who do not know that they have skin cancer
- Who cares?
  - Patients with skin cancer
  - Doctors
  - Family members of a patient with skin cancer
  - Friends of a patients with skin cancer
  - Mayo Clinic
- How will it be used?
  - With AI models to recognize skin cancer on the body
  - Training AI models with real life images from medical institutes
  - To get in front of the cancer before it spreads past the skin into the body