Final Project Presentation

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AGENDA

1. Project Outcome
2. Methodology Used
3. Software Deliverables
4. Project Management
5. Further Work

Speaker: Elaine

Project Outcome

Speaker: Vionnie

IMPLEMENTATION

- Given dataset divided into 6:2:2 ratio
- Data Augmentation and Normalization done on Training and Validation datasets
- Using a pre-trained resnet50 model
- Utilizing transfer learning and altering parameters
- Model is feeded onto our Website
- Tested on localhost
- Deployed on Heroku

Speaker: Vionnie

Results Achieved & Products Delivered

- Final Predictive Model has an accuracy of 81.4%
  - Batch Size 16
  - Epoch 35
  - Adam Optimizer
  - LR Scheduler
  - Cross Entropy Loss function
- Delivered main python notebook, inference notebook and main python script

Speaker: Vionnie

How requirements are met

- Kept track of the user-stories created to match our acceptance criteria
- Updated requirement traceability matrix

Speaker: Vionnie

Outcome Limitations

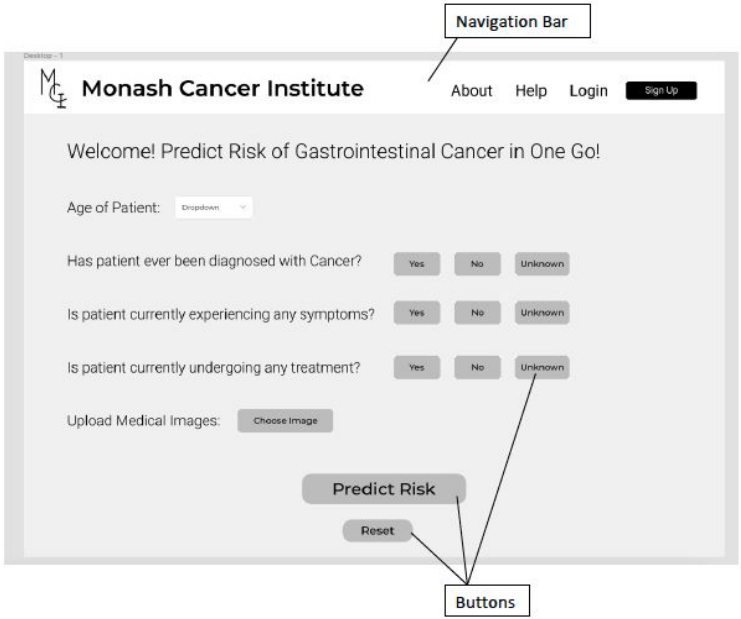
- Fulfilled the MVP, but not what was mentioned in the initial project proposal
  - Particularly the accuracy of our model
- For our website component, our users aren't able to view the image they uploaded

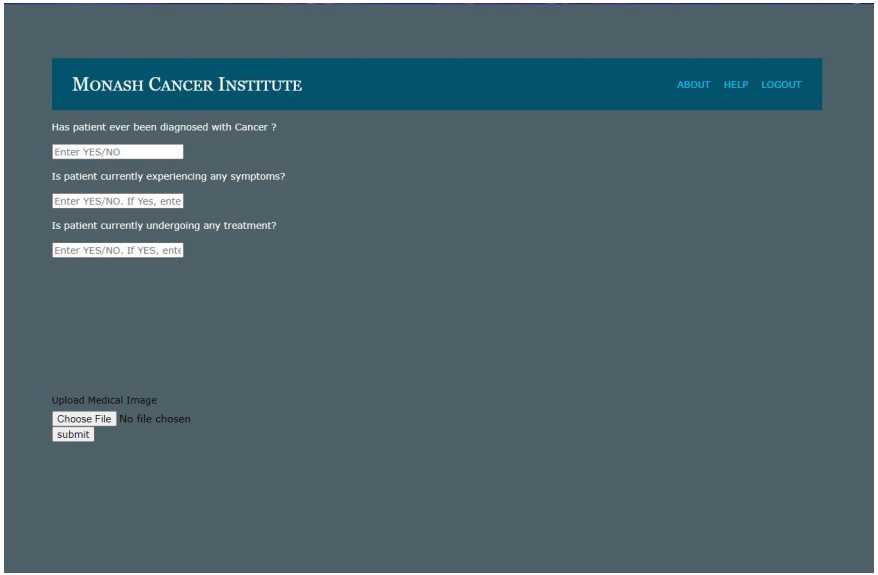
Speaker: Vionnie

Methodology

Speaker: Elaine

Design





Speaker: Elaine

Tools

Speaker: Elaine

Software

Speaker: Elaine

Hardware

- Coding
  - Personal devices – MacOS, Windows
- Training
  - High GPU Windows device

Speaker: Elaine

Software Deliverables

Speaker: Elaine

What is delivered?

Project management-related deliverables:

1. Business Case
2. Weighted Scoring Model
3. Scope statement
4. Requirements Traceability Matrix
5. Risk Register
6. Final Project Presentation
7. Final Project Report

Product-related deliverables:

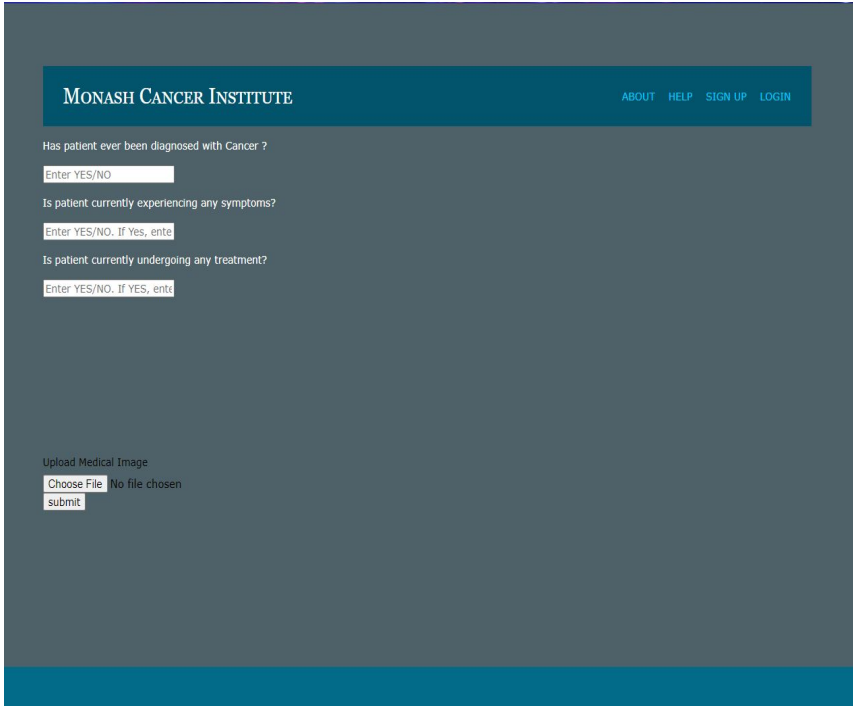
1. Predictive model software code
2. Research Report
3. Website for cancer prediction
4. Website design document
5. Website software code
6. End-user and technical guide
7. Code Demonstration
8. Software Test / QA Report

Speaker: Elaine

Usage Description

https://cancerprediction-4.herokuapp.com/

1. Sign up button on the top right side
2. Fill in credentials
3. Enter credentials
4. Log in
5. Fill up the form
6. Upload image
7. Submit to get result



Speaker: Elaine

Software Qualities

Speaker: Jack

Software Quality - Robustness

- Test the existence of file
- Restrict the files types (JPG, JPEG, PNG)
- Not able to validate the input image
    - Exception handling is created
- User signup data will be validate
- Logs will keep on heroku system

Speaker: Jack

Software Quality - Security

User Authentication

- By SQLAlchemy and Flask-login modules
- Users' passwords are kept safely
  - Name and email are not kept safely
- Ensured the user is the true user with check_password_hash

User Authorization

- Allows users to do what they want if they are legit
  - Flask-login function (current_user.is_authenticated)
  - Check identity before executing relevant code
- Single level users
  - Only logged in users are able to use database functionality

Speaker: Jack

Software Quality - Security & Usability

Access (Security)

- Encryption methods on our project is preliminary
  - Only developers can access the database

Usability

- User Friendly layout
- Well positioned button
- Buttons provided in most of the pages
- Step-by-step instructions for usage of website

Speaker: Jack

Software Quality - Scalability

- No budget to make extensions
- Heroku’s memory usage (512 MB)
- Future expansion is possible

Speaker: Jack

Software Quality - Documentation and Maintainability

- Documentation on functions on what the code does
- Usage of white spaces and indentation
- Related code are close to each other
- Consistent naming of variables and functions

Speaker: Jack

Project Management

Speaker: Vionnie

Agile Methodology

- Flexibility to adapt to changes
- Short cycle burts
- Kanban Boards

(InDevLAB, 2020)

Speaker: Vionnie

Further Work

Speaker: Vionnie

FURTHER WORKS

- Predictive model can be developed using different pre-trained models such as DenseNet, AlexNet to improve accuracy
- Website can have different functionalities
- Cover a wider range of cancers

Speaker: Vionnie

Conclusion

Speaker: Elaine

Conclusion

- Project outcome
  - Implementation
  - Results achieved
  - Outcome limitations
- Methodology
  - Design
  - Tools
  - Software
  - Hardware
- Software Deliverables
  - Usage description
  - Software quality
- Project management
- Further work

Speaker: Elaine

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THANK YOU!