Date:- 5,Apr.’2024

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**PRACTICUM REVIEW II**

**CSL306**

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| **Batch No.** | B-26 | **Semester** | IV |
| **Branch** | CSE | **Supervisor** | Dr. Shivdutt Sharma |

1. **Title of the Project :-**  
   “HeartGuard” Predictive Modelling for Cardiovascular Wellness
2. **Introduction :-**

* HeartGuard focuses on the development of a robust machine learning model designed to predict heart disease risks. With a growing global concern for cardiovascular health, early detection and preventative measures are essential.
* Heart disease is a prevalent and life-threatening health condition that requires early detection for effective treatment. Machine learning models have shown promise in predicting heart disease, offering a proactive approach to healthcare.

1. **Problem Definition :-**

This project aims to develop a machine learning model for predicting the likelihood of heart disease in individuals based on various health-related features.

1. **Objectives :-**

* To collect a comprehensive dataset containing relevant health features.
* To explore and analyse the dataset to understand the relationships between features and the target variable (heart disease).
* To design and implement a machine learning model for heart disease prediction.
* To evaluate the model's performance using appropriate metrics.

1. **Skillset additionally required to solve the problem :-**

* Machine Learning.
* Feature Engineering.
* Data Visualization.
* Domain Knowledge (Healthcare).
* Model Evaluation.
* Ethics and Privacy Awareness.

1. **Timeline to achieve the skillset :-**

* Almost 16 weeks to complete the project.

1. **Block schematic :-**

Model Training

Model Selection

Dataset

Model Testing

Accuracy Prediction

Model Deployment

1. **Weekly milestones :-**

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| **Week** | **Major Activities to be Completed** |
| Week 1 | Domain Exploration for ideas. |
| Week 2 | Idea Exploration. |
| Week 3 | Exploration different platforms for collecting data. |
| Week 4 | Dataset filtration. |
| Week 5 | Explore the Basics of Python and ML. |
| Week 6 | Explore the Basics of ML Algorithms. |
| Week 7 | Training of the model. |
| Week 8 | Training of the model. |
| Week 9 | Test and tune model to increase accuracy and finalize model. |
| Week 10 | Testing and debugging. |
| Week 11 | Finalize model after testing. |
| Week 12 | Deployment. |
| Week 13 | Ethical considerations. |
| Week 14 | Updates and improvements. |
| Week 15 | Updates and improvements. |
| Week 16 | Finalize all aspects of the project. |

1. **Completed Milestones :-**

* Idea exploration.
* Dataset Exploration.
* Basic Python and Basic Libraries Learning.
* Exploration of Machine Learning Models Theory.
* Confusion Matrix.

1. **Milestones to be Completed :-**

* Selection of Appropriate model for Project.
* Training and Testing of the Model.
* Searching better model or neural networks for the Prediction Model.
* Checking Ethical considerations.
* Finalizing the Model.

1. **Expected Challenges :-**

* Imbalanced Data :- Unequal representation of positive and negative cases.
* Data Quality and Cleaning :- Noisy or inaccurate data.
* Feature Selection :- Identifying the most relevant features.
* Overfitting :- Model fitting the training data too closely.
* Ethical Considerations :- Ensuring fairness and avoiding bias.
* Continuous Model Monitoring and Updating.

1. **References :-**

* D. Zhang, Y. Chen, Y. Chen, S. Ye, W. Cai, and M. Chen, “An ECG Heartbeat Classification Method Based on Deep Convolutional Neural Network,” Journal of Healthcare Engineering, vol. 2021, 2021, doi: 10.1155/2021/7167891
* B. Deepak Kumar, S. Yellaram, S. kothamasu, S. Puchakayala, and A. Professor, “Heart Stroke Prediction using Machine Learning,” 2021. [Online]. Available: www.ijcrt.org

**Name and Signature of Student**

**Name and Signature of Supervisor**