Indian Institute of Information Technology, Una [HP]
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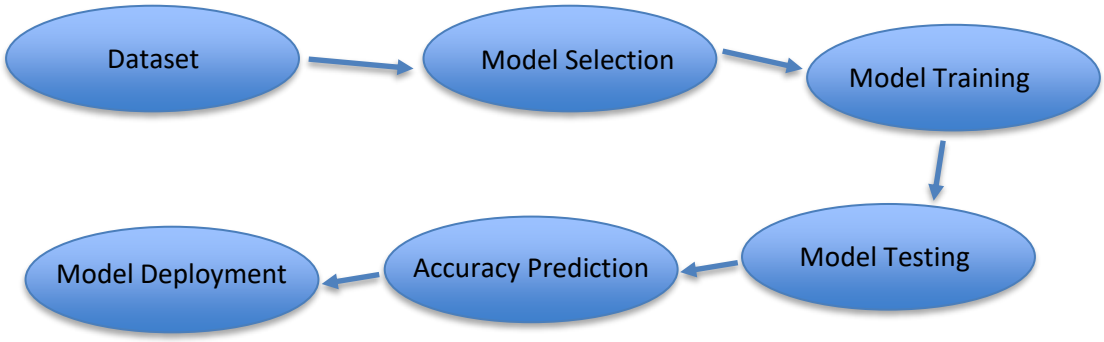
PRACTICUM REVIEW I

CSL306

Student Name	**Keshav Agarwal**	**Roll No.**	22136
Batch No.	B-26	**Semester**	IV
Branch	CSE	**Supervisor(s)**	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.
3. **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.
4. **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.
5. **Skillset additionally required to solve the problem :-**
   - Machine Learning.
   - Feature Engineering.
   - Data Visualization.
   - Domain Knowledge (Healthcare).
   - Model Evaluation.
   - Ethics and Privacy Awareness.
6. **Timeline to achieve the skillset :-**
   - Almost 16 weeks to complete the project.

7. Block schematic :-



8. Weekly milestones :-

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	Create Dataset
Week 8	Train the model to understand messages and provide responses
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

9. Completed Milestones :-

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

10. 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.

11. 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.

12. 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**