

A Project Report on

**“Heart Disease Prediction USING ML”**

Submitted in Partial Fulfilment of the Requirements For the award of the degree

### **Master of Computer Applications**

**SUBMITTED BY**

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## **CERTIFICATE**

#### This is to certify that YASHWANTH H with Register No. 22P01093 has satisfactorily completed the fourth semester MCA Project titled “HEART\_DISEASE\_PREDICTION USING ML”, as a partial fulfilment of the requirements for the award of the Degree in Master of Computer Applications, awarded by Bengaluru City University, during the Academic Year 2024.

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**Ms Veena S Badiger**

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1. -------------------------------- **Examination Centre: PRESIDENCY COLLEGE**

2. -------------------------------- **Date of the exam:**

**DECLARATION**

The project titled **“HEART\_DISEASE\_PREDICTION USING ML”** developed by me in the partial fulfilment for the award of Master of Computer Application. It is a systematic work carried by us under the guidance of Mrs. Veena Sanjay, Assistant professor, Department of Computer Applications.

I, declare that this same project has not been submitted to any degree or diploma to the Bengaluru City University or any other Universities.

Name of the student: -

Date:-

Signature  
  
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**ACKNOWLEDGEMENT**

The development of software is generally bit complex and time consuming task. The goal of developing the project **“HEART\_DISEASE\_PREDICTION USING ML”** could not be archived without the encouragements of kindly helpful and supportive people. Here by we convey our sincere thanks for all of them.

I take this opportunity to express my gratitude to people who had been instrumental in the successful completion of this project.

I am thankful to our management trustee for providing us an opportunity to work and complete the project successfully.

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The guidance and support received from our Internal Guide Ms. Veena S Badiger, who contributed to this project, was vital for the success of the project. We are grateful for her constant support and help.

**ABSTRACT**

The Heart Disease Prediction project addresses a pressing public health issue: the rising prevalence of heart disease, which is a leading cause of morbidity and mortality worldwide. This project leverages machine learning techniques to create an accessible and user-friendly web-based application that allows individuals to assess their risk of developing heart disease based on various health parameters. Developed using Python with frameworks such as Flask and Streamlit, the application emphasizes usability, security, and functionality.

Upon accessing the application, users can register or log in securely. The registration process captures essential details like username, password, and email, which are stored securely using hashing techniques to ensure data privacy. This focus on security builds user trust and encourages participation in monitoring their heart health.

Once logged in, users can input critical health metrics, including age, sex, blood pressure, cholesterol levels, and other relevant factors. The application employs input fields designed for accuracy, including dropdown menus for categorical variables to minimize errors. The core functionality is powered by a pre-trained machine learning model that analyzes user data to predict the likelihood of heart disease based on established medical datasets.

The prediction model utilizes algorithms such as logistic regression or decision trees, trained to recognize patterns correlating with heart disease. After entering their data, users receive immediate feedback regarding their risk status—whether they are likely to develop heart disease—enabling them to take proactive steps towards maintaining their health. This real-time feedback is critical, as it empowers users to make informed decisions about their well-being.

In addition to risk predictions, the application provides users with actionable insights and preventive measures to reduce their risk of heart disease. Recommendations include adopting a heart-healthy diet, engaging in regular physical activity, avoiding smoking, and managing stress. By offering tailored advice, the application promotes a holistic approach to heart health, encouraging users to adopt healthier lifestyles.

Data security and privacy are paramount in this project. User credentials and health information are stored securely, ensuring confidentiality. The application also includes a logout feature, allowing users to maintain control over their accounts. This commitment to security is crucial in handling sensitive health-related data.

Python's extensive libraries and frameworks facilitate the project's development. Libraries like Pandas and NumPy are utilized for data manipulation, while Scikit-learn provides the necessary tools for building and evaluating machine learning models. Streamlit enhances the user experience by allowing rapid development of interactive web applications.

The project incorporates rigorous testing and validation measures to ensure the reliability and accuracy of predictions. This includes unit testing for individual components and integration testing for the overall system. Continuous feedback mechanisms are established to refine the model and enhance user experience based on real-world usage.

Future enhancements could include integrating additional health metrics, such as family history and lifestyle habits, to improve prediction accuracy. Expanding the application to include educational resources on heart health can further empower users to take charge of their health.

In summary, the Heart Disease Prediction project combines technology with user-centered design to improve individual health awareness and management. By merging machine learning with user-friendly interfaces, it provides an effective tool for assessing heart disease risk and promotes proactive health measures, ultimately contributing to better public health outcomes.

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