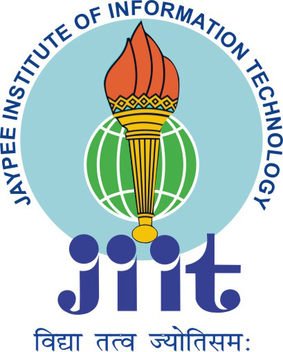
**NETWORKS OF LIFE**

**Heart Disease Prediction**

**PROJECT SYNOPSIS**



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**1. Introduction:**

Heart disease is a significant health concern worldwide, causing a substantial number of deaths. Early detection and prediction of heart disease can greatly improve patient outcomes. This project aims to develop a predictive model for heart disease using artificial neural networks (ANN) based on data from various sources.

**2. Objective:**

The primary objective of this project is to create an accurate predictive model for heart disease using artificial neural networks. Specifically, the project aims to:

* Utilise a dataset containing relevant features such as age, gender, cholesterol levels, blood pressure, and other medical indicators.
* Train and evaluate an ANN model to predict the likelihood of heart disease in patients.
* Provide a tool that can assist healthcare professionals in assessing a patient's risk of heart disease based on their medical data.

**3. Problem Statement:**

The problem at hand is to develop a reliable predictive model that can effectively identify individuals at risk of heart disease based on their medical history and health-related attributes. This prediction can aid in early intervention and personalised healthcare.

**4. Methodology:**

**4.1 Data Collection:**

* Gather a comprehensive dataset that includes patient demographics, medical history, and diagnostic test results related to heart disease.
* The dataset can be obtained from publicly available sources, research institutions, or healthcare providers.

**4.2 Data Preprocessing:**

* Clean the dataset by handling missing values, outliers, and data inconsistencies.
* Normalise or standardise the data to ensure that all features have the same scale.
* Encode categorical variables into numerical format if necessary.

**4.3 Model Development:**

* Implement an artificial neural network (ANN) using appropriate libraries or frameworks like TensorFlow or PyTorch.
* Split the dataset into training and testing sets to evaluate model performance.
* Experiment with different network architectures, hyperparameters, and regularisation techniques.
* Train the model on the training dataset and monitor its performance using appropriate metrics (e.g., accuracy, precision, recall, F1-score).

**4.4 Evaluation:**

* Assess the model's performance using various evaluation metrics.
* Fine-tune the model to improve its predictive accuracy.
* Employ techniques such as cross-validation to validate the model's generalisation performance.

**5. Conclusion:**

This project aims to develop an effective predictive model for heart disease using artificial neural networks. By leveraging patient data and training a machine learning model, we can assist healthcare professionals in identifying individuals at risk of heart disease. Early detection and intervention can potentially save lives and improve the overall quality of patient care.

**6. References:**

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3. Singh, A., & Kumar, R. (2020, February). Heart disease prediction using machine learning algorithms. In 2020 international conference on electrical and electronics engineering (ICE3) (pp. 452-457). IEEE.