**MIRPUR UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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**Department of Computer Science and Information Technology**

**FINAL YEAR PROJECT PROPOSAL & PLAN**

**"** **Heart Disease Risk Prediction System "**

**Project Team**

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| **Name of Student** | **Reg. Numbers** | **Program** | **Contact Number** | **Email Address** |
| Syed Muhammad Zafran Haider Kazmi | FA21-BIT-064 | BSIT | 0347-2820571 | zraaeae@gmail.com |
| Muhammad Abdul Ahad | FA21-BIT-083 | BSIT | 0333-1482919 | gokuahad11@gmail.com |
| Ghanwa Rani | FA21-BIT-087 | BSIT | 0309-0684918 | ghanwarani0034@gmail.com |

**Acceptance by Supervisor**

I have read the proposal and agree to supervise the above project team for partial requirement of the degree program\_\_\_\_\_\_\_. The proposed project is academically, logistically, and financially feasible and all the required literature, equipment, and laboratory facilities are or will be available.

**Project Supervisor** (Designation):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **"** **Heart Disease Risk Prediction System** (**RiskBea**t)**"**

**Change Record**

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| **Author(s)** | **Version** | **Date** | **Notes** | **Supervisor’s Signature** | **Co-Supervisor’s**  **Signature** |
| Syed Zafran Haider Kazmi | 1.0 | 7/3/2014 | Original draf t(Initial proposal) |  |  |
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**Project Proposal**

**Project Title:** Heart Disease Risk Prediction System  
**Introduction:**

The health care industries collect huge amounts of data that contain some hidden information, which is useful for making effective decisions. For providing appropriate results and making effective decisions on data, some advanced data mining techniques are used. This Heart Disease Risk Prediction System is developed using gradient boosting and Logistic regression algorithms for predicting the risk level of heart disease. The system uses 13 medical parameters such as age, sex, blood pressure, cholesterol, and obesity for prediction. The Heart Disease Risk Prediction System predicts the likelihood of patients getting heart disease. It enables significant knowledge. E.g. Relationships between medical factors related to heart disease and patterns, to be established. We have employed the multilayer perceptron neural network with back propagation as the training algorithm. The obtained results have illustrated that the designed diagnostic system can effectively predict the risk level of heart diseases.

**Existing System/ Description of the Current Situation:**

Currently, heart disease is a major health issue, but there aren't many efficient systems to predict it early. Most medical diagnoses rely on expensive tests and doctor consultations, which may not be affordable for everyone. Even though a lot of healthcare data is available (like patient records, test results, and images), this data is not fully utilized for predictions. As a result, early detection of heart problems is often missed, leading to more serious health issues and costly treatments.

**Problem Statement:**

Now days, heart disease is the most common disease. But, unfortunately the treatment of heart disease is somewhat costly that is not affordable by common man and heart disease is one of the leading causes of death worldwide. Early diagnosis can significantly improve treatment outcomes, but current methods are often expensive, time-consuming, and inaccessible to many individuals. Despite the availability of large amounts of healthcare data, it is underutilized for predictive analysis. There is a need for a cost-effective and efficient system to predict the likelihood of heart disease early, using patient data like age, blood pressure, cholesterol levels, and other medical indicators. Such a system can assist healthcare providers in making accurate, data-driven decisions to improve patient care and reduce treatment costs.

**Proposed Solution:**

We can reduce this problem in some amount just by predicting heart disease before it becomes dangerous using Heart Disease Risk Prediction System. If we can find out heart disease problem in early stages then it becomes very helpful for treatment. Machine Learning and Data Mining techniques are used for the construction of Heart Disease Risk Prediction System. In healthcare biomedical field, there is large use of heath care data in the form of text, images, etc. but, that data is hardly visited and is not mined. So, we can avoid this problem by introducing Heart Disease Risk Prediction System. This system will help us reduce the costs and to enhance the quality treatment of heart patients. This system can able to identify complex problems and can able to take intelligent medical decisions. The system can predict likelihood of patients of getting heart problems by their profiles such as blood pressure, age, sex, cholesterol and blood sugar. Also, the performance will be compared by calculation of confusion matrix. This can help to calculate accuracy, precision, and recall. The overall system provides high performance and better accuracy.

**Scope of the Project:**

1. **Disease Prediction (6 Different Models)**
   * Uses Machine Learning (Xtreme Gradient Boosting) to predict heart disease risk (low, high).
   * Analyzes patient data like age, blood pressure, cholesterol, etc.
   * Provides personalized insights for early diagnosis and better treatment planning.
2. **Risk Beat – Diagnosis (Chatbot System)**
   * A custom chatbot to analyze symptoms, predict diseases, and suggest treatments.
   * Helps users identify possible heart conditions and their remedies.
3. **Doctor Appointment Module**
   * Users can search for doctors by name, specialization, and location.
   * Displays doctor profiles with qualifications, experience, and availability.
   * Supports both in-person and virtual consultations.
4. **Lifestyle Assessment**
   * Users input lifestyle habits (age, sleep duration, physical activity, stress, BMI, blood pressure, etc.).
   * Predicts initial heart disease risk based on daily habits.
5. **Fitness Tracker**
   * Tracks daily calories, food intake, and exercise activity.
   * Helps users maintain heart-healthy fitness goals.
6. **Health Deals and Checkup Alerts**
   * Notifies users about free health checkups and medicine discounts.
   * Promotes preventive healthcare awareness.
7. **View Diseases**
   * Provides detailed information about various heart diseases, symptoms, causes, and treatments.
   * Helps users and doctors make informed decisions.
8. **Role-Based Logins (Admin, User, Doctor)**
   * **Admin**: Manages system users and data.
   * **Doctor**: Views patient predictions and provides medical advice.
   * **User**: Submits health data and views predictions.
9. **Search Your Doctor**
   * Allows users to find heart specialists based on location and expertise.
   * Displays contact details and consultation availability.
10. **Community Module**

* Platform for users, doctors, and professionals to interact.
* Users can share experiences, ask health-related questions, and receive peer support.

1. **Feedback System**

* Collects user and doctor feedback on system functionality and accuracy.
* Helps improve the user experience and prediction accuracy.

**List of Project Committee Proposed Changes**

**Project Title**

**Supervisor’s Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Co-Supervisor’s Signature(If applicable): \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **Proposed Change** | **Proposed By** | **Supervisor’s Decision** |
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**Approval**

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| **Project Supervisor** | |
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| **Project Co-Supervisor(If Applicable)** | |
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| **Project Coordinator** | |
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