AGILE SOFTWARE

**SOFTWARE REQUIREMENTs SPECIFICATION**

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### Version <draft>

### Prepared by

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**Revisions**

| **Version** | **Primary Author(s)** | **Description of Version** | **Date Completed** |
| --- | --- | --- | --- |
| SRS  Version draft | Yashwanth CJ | This project name is Precision Health Analytic for Heart Conditions. | 10/05/24 |

# *In this template you will find text bounded by the “<>” symbols. This text appears in italics and is intended to guide you through the template and provide explanations regarding the different sections in this document. There are two types of comments in this document. These comments that are in black are intended specifically for that course. These comments that are in blue are more general and apply to any SRS. Please, make sure to delete all of the comments before submitting the document.*

# *The explanations provided below do not cover all of the material, but merely, the general nature of the information you would usually find in SRS documents. It is based on the IEEE requirements and was adapted specifically for the needs of Software Engineering 3K04/3M04 courses. Most of the sections in this template are required sections, i.e. you must include them in your version of the document. Failure to do so will result in marks deductions. Optional sections will be explicitly marked as optional. If you have any questions regarding this document please refer to the MiniThermostat SRS example on the course web-site.*

# Introduction

*This project name is Precision Health Analytic for Heart Conditions. It predicts the*

*accuracy of the heart attack based on various features such as age, sex, CP, cholesterol, target, etc…*

## Document Purpose

*The purpose of this document is to accurately predict the heart attack taking place every year.*

## Product Scope

*To develop a predictive model using random forest algorithms to accurately diagnose heart attacks based on relevant medical attributes, aiming to enhance early detection and treatment efficacy.*

## Intended Audience and Document Overview

* *Intended Audience :*
  + *General Public: Including individuals interested in understanding heart health, risk factors, symptoms, and preventive measures.*
  + *Patients and Caregivers: Providing information about heart attack causes, symptoms, treatment options, and recovery.*
* *Document Overview :*

1. *Introduction to Heart Attacks :*

* *Definition and overview of myocardial infarction (heart attack).*
* *Importance of understanding heart attack risks and prevention.*

## Definitions, Acronyms and Abbreviations

*Not Applicable for this project.*

## Document Conventions

*Not Applicable for this project.*

## References and Acknowledgments

*The reference of the code is from GeeksforGeeks.*

# Overall Description

## Product Perspective

*The model aims to predict heart attack livelihood based on various health constraints. It*

*offers a comprehensive tool for specialists to prioritize interventions and improve patient's outcomes.*

## Product Functionality

*The heart attack information product will help everyone understand what a heart attack is and what causes it, including risk factors like high blood pressure, cholesterol, smoking, and family history. It explains the signs and symptoms of a heart attack, such as chest pain and shortness of breath, and how doctors diagnose and treat it using tests like ECGs and medications like aspirin and nitroglycerin. The product also covers ways to prevent heart attacks through healthy habits like exercise, diet, and stress management, aiming to empower users with knowledge for better heart health and wellbeing.*

## Users and Characteristics

*The primary users are healthcare professionals, researchers, specialist, developers interested in predicting heart attacks accurately.*

## Operating Environment

*OS = WINDOWS and MACOS.*

## Design and Implementation Constraints

*Not available for some time.*

## User Documentation

*Will be prepared. Predict heart attack risk using a Random Forest model trained on*

*provided data, achieving highest accuracy. Refer to documentation usage instructions.*

## Assumptions and Dependencies

*Not applicable for this project.*

# Specific Requirements

## External Interface Requirements

### User Interfaces

*CSV File, MS excel.*

### Hardware Interfaces

*Not Applicable for this project.*

### Software Interfaces

*Google Colab.*

### Communications Interfaces

*Not Applicable for this project.*

## Functional Requirements

1. *Information Presentation :*
   1. *Display clear and concise information about heart attacks, including causes, symptoms, and risk factors.*
   2. *Provide educational content on diagnosis methods, treatment options, and prevention strategies.*
2. *Interactive Features :*
   1. *Include interactive elements such as quizzes or self-assessment tools to enhance user engagement and understanding.*
   2. *Allow users to navigate easily through different sections of the information, providing a smooth user experience.*
3. *Accessibility :*
   1. *Ensure accessibility features such as text resizing, screen reader compatibility, and color contrast options for users with disabilities.*
   2. *Make the information accessible across various devices like smartphones, tablets, and desktops.*

## Behavior Requirements

*Educational Content :*

*Provide clear and concise information about heart attacks, including causes, risk factors, symptoms, diagnosis, and treatment options.*

### Use Case View

* *User-Friendly Interface : Design an easy-to-navigate interface with intuitive menus and sections for different topics.*
* *Interactive Features : Include interactive elements such as quizzes, videos, and infographics to engage users and enhance understanding.*
* *Accessibility : Ensure accessibility features for users with disabilities, such as screen readers and alternative text for images.*
* *Search Functionality : Implement a search feature to allow users to quickly find specific information within the content.*
* *Responsive Design : Optimize the product for various devices and screen sizes to provide a seamless user experience.*
* *Feedback Mechanism : Incorporate a feedback system for users to provide input, ask questions, and share their experiences with the product.*
* *Update and Maintenance : Regularly update the content with latest research findings and maintain the product to ensure functionality and accuracy over time.*

# Other Non-functional Requirements

## Performance Requirements

| *Function* | *Score* |
| --- | --- |
| *GaussianNB* | *0.7937743190661478* |
| *DecisionTreeClassifier* | *0.9766536964980544* |
| *RandomForestRegressor* | *0.9191010727272727* |
| *KNeighborsClassifier* | *0.7198443579766537* |
| *accuracy\_score* | *0.6770428015564203* |

## Safety and Security Requirements

*Data Security.*

## Software Quality Attributes

*Should provide high accuracy to avoid misdiagnosis.*

# Other Requirements

*This is an Optional section.*

*Not applicable for this project.*

**Appendix A – Data Dictionary**

*Data dictionary is used to track all the different variables, states and functional requirements that you described in your document. Make sure to include the complete list of all constants, state variables (and their possible states), inputs and outputs in a table. In the table, include the description of these items as well as all related operations and requirements.*

**Appendix B - Group Log**

*Please include here all the minutes from your group meetings, your group activities, and any other relevant information that will assist the Teaching Assistant to determine the effort put forth to produce this document.*