Year 3 Final Year Project

Supervisor: Dr Hermawan Nugroho
Moderator: Prof T. Nandha Kumar
Project Code: HN-BEng-23-01

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Student ID: 20418760

Legends:
Error Bars for Uncertainty: ↔
Submission Dateline: ✖ (red cross)
Moderator Meeting Week: (purple)
Project Milestone: ☆ (yellow star)

Timeline Periods
- Autumn Semester (Sept – Dec, Week 4 – Week 16)
- Study Week (Week 16 – 18)
- Exam (Week 19 – 20)
- Sem Break (Week 21)
- CNY Break (Week 24)
- Spring Semester (Feb – Mar)
- HR Break (Apr, Week 32)
- Study Week (May, Week 37)

Tasks

Project Planning
- Hazard Identification, Risk Assessment, Risk Control Form (HIRARC) Form
- FYP Briefing and Discussion on Project Specification
- Hardware Inspection and Sensor Component Research
- Software, Tools and Application Research
- Finalising Project Objectives and Project Specification ☆
- Hardware and Software Research and Purchase Cost Estimation
- Purchase Requisition
- Lab Space Booking
- Obtaining Ethical Approval
- Writing Project Outline and Planning Report
- Submission of Project Outline and Planning Report ✖

Research and Literature Review
- Researching of Common Application of Edge Computing
- Literature Review of Emotion Recognition using ECG ☆
- Literature Review of Common Heart Disease ☆
- Literature Review of Heart Disease Detection using Machine Learning and Deep Learning ☆
- Literature Review of Heart Disease Prediction Model ☆
- Literature Review of STM32MP157F DK Edge Computing Device and Application ☆
- Literature Review of Software Tools, Model and Architecture for Edge Computing ☆

Design Solution/Application
- Research and Learning the Function of STM32MP157F DK Edge Computer
- Installing Virtual Machine to Set Up STM32 Software to Flash OS into the Edge Computer
- Installing STM32 Cube Programmer in Ubuntu OS
- Coding Program to Test Functions of Edge Computer
- Integrating Heart Monitoring Sensor onto the Edge Computer ☆
- Coding Program to Test Sensors and Perform Experiments to Ensure Accurate Measurements of Sensors ☆
- Designing Wearables of that can be integrated with Heart Disease Detection and Prediction Solution (Optional)

Development of AI Model
- Setting Up Environment to Deploy Heart Disease Detection and Prediction Model
- Coding Program to Develop Emotion Recognition Model ☆
- Coding Program to Develop Heart Disease Prediction Model (Optional) ☆
- Coding Program to Connect Sensor with AI Model ☆
- Coding Program to Display Prediction Output on the LCD Display (Optional)
- Developing User Interface to Monitor Heart Disease and Data Collected from Sensor (Optional)
- Debugging Code to Solve Bugs Found, Improvement of Code/Model

Deployment of Model and Sensor into Edge and Cloud Computer
- Combining both Software and Hardware Developed into Wearables (Optional)
- Deploying Heart Disease Prediction Model Developed onto Cloud Computer (Optional) ☆
- Deploying Emotion Recognition Model Developed onto Edge Computer ☆
- Performing Testing on Real Live User
- Obtaining User Experience, Feedback and Model Prediction Result ☆
- Performance Improvement and Solving Bugs

Thesis, Documents and Presentation
- Writing Sections of Draft Thesis
- Draft Typed Thesis Submission ✖
- Writing Sections of Final Thesis
- Final Thesis, Logbook, Code and Miscellaneous Submission ✖
- Preparation of Presentation
- Presentation ✖
- Return of Project Items