ONG ROEY YEE

Mechatronic System Engineer | Software – Dyson

Bachelor's degree - Electronic majoring in Telecommunication

GitHub: https://github.com/Roey0204/My-Portfolio

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OBJECTIVE

Having some years of experience in engineering, I am actively seeking engineering role for software relevant where I can contribute via using my technical solving skills and analytic abilities.

ABILITIES

- Collaborated with cross – functional teams to understand problem statements and delivered technical solutions by designing and developing proofs of concept for new features on various platforms.
- Conducting data analysis based on user data to identify new product features that meet the business requirements.
- Monitoring manufacturing process via applied 6 sigma methodology/statistic.
- Employed SourceTree/GIT for software version control and exhibited proficiency in using Jira, Confluence, and Team Center page for managing tasks and ensuring timely delivery.
- Demonstrating proficiency in creating software scripts in utilizing Algorithm and UML diagrams (state, class, sequence) for optimal software development.
- Various software testing methods including Black/White Box and Unit Testing.
- Experienced in executing GR&R to assess the accuracy of gauging instruments and conducting FMEA for risk analysis and assessment.

SKILLSET

- Skilled in scripting languages including Python, .NET C#, and C/C++, as well as experienced in LabView.
- Familiar with Linux and window operating systems environment.
- Comprehend and implement the principles of Object-Oriented Programming to create code that is organized, concise, and can be reused.
- Implementation of IOT application using Raspberry pi to transmit and receive lightweight data over a resource-constrained network using MQTT/http protocol.
- Experienced in using hardware measurement tools such as Power Analyzer, Oscilloscope, Logic Analyzer.
- Executed data acquisition through I2C, UART, and SPI communication protocols, and demonstrated basic usage of Interrupt Service Routines (ISRs) for improved system responsiveness.
- Experienced in using microcontroller/microprocessor unit such as 8051 / ESP32 / Raspberry Pi etc.
- Proficient in both SQL (SQLite 3) and NoSQL (MongoDB) database management systems to optimize data storage, retrieval, and manipulation processes.
- Build prediction supervised or unsupervised model using machine learning.
- Familiar with data visualization tools like JMP/ Python library pandas/matplotlib.
- Fundamental understanding on REST API to create end point for backend use case.
- Proficient in web frameworks like Django that follow Model-View-Controller (MVC) pattern, along with expertise in HTML, CSS, and JavaScript (DOM/jQuery).

Experiences

Mechatronic System August 2022 – Present (Tech Department)

Job Description:

- This position sits within MAC (Measurement & Analysis Capability) group as part of Dyson Technology department, to enhance the development of new technologies across all Dyson product categories by practicing blend of software, mechanical and electronic expertise to innovate full-stack platform or tools for data acquisition, data analysis or research that used by Dyson engineers globally.

Latest Project (Self own project): Develop IOT Logger Device

Introduction:

The objective of this logger is to enhance machine measurement capabilities encompassing voltage, current, motor speed, pressure, and temperature, serving characterization needs, software feature simulation, and eventual collection of user trial feedback. Additionally, it functions as a versatile wrapper logger/adaptor, facilitating seamless integration with product feature algorithms.

Mission / Accomplishments:

- Develop UML sequence diagram to showcase the software architecture to stakeholders before project commencement, alongside class diagram outlining the structure of each software module for development planning.
- Create electronic schematic diagram via Altium software.
- Develop Graphical User Interface software on Raspberry Pi to let user to control the configuration setting via LCD touch screen via Django Framework / Tkinter.
- The logger's design includes Balena dashboard to remotely update the software through Docker container concept.
- Real time data will be captured via serial communication (UART) between machines and Raspberry pi through FTDI cable and been pushed to influx dB server which stored at AWS and display by using Grafana.
- Unit test framework needs to be executed to ensure the software is robust.

First Project: Develop Floor Wetness Algorithm

Introduction:

Our team mission is to develop an image processing tool that can capture /identify the floor conditions after the floor finish activities. The objective is to understand the weighting scale of wetness index across the competitor products vs Dyson products.

Mission / Accomplishments:

- Create and plan from scratch build Software UML, and electronic schematic sketching.
- Through performing the characterization test result, we need to design an algorithm that can capture the water spot pattern, number of water spots, water spot size and so on by using OpenCV and PyQt also takes part for performing graphical User Interface to let user control the hardware setting on tester.

Second Project: Heater System Tester

Introduction:

The objective of this project is to develop a comprehensive tester capable of capturing essential parameters such as power, voltage, and current draw consumption. Furthermore, it aims to incorporate the capability to measure heat readings emitted from a hair dryer across varying distances. This multifaceted approach not only ensures a thorough assessment of the device's performance but also enables precise analysis of its thermal characteristics under diverse conditions.

Mission / Accomplishments:

- Develop software module to acquire thermocouple temperature reading using NI DAQ - 9217.
- Develop creating software module to acquire data from Power Analyzer of the UUT (Unit Under Test).
- Execute GR & R process to validate the capabilities of the tester which match Dyson requirements.

Junior Engineer (Dyson Design Department)

(2019 September – 2021 March)

|
| Promoted
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2021 UI-UX Design Engineer

(March 2021 – August 2022)

Job Description:

- Work at intersection of hardware and software across our digital and physical Environment Care products.
- Acquired design, develop, and validate the concept, researched by new product Innovation team (NPI) to ensure our innovative technologies and features have intuitive user feedback and behaviors.

Mission / Accomplishments:

- As pioneer in Malaysia branch environment care team, we present and explain findings or idea concisely to all stakeholders in various type of forum, design reviews, brainstorming sessions.
- Own and manage feature behavior documentation and identify new features and continuous improvement opportunities across the environment care product range and ensure compatibility with our existing products.
- Execute user trial across different milestones to collect user data / feedback for further analysis to ensure new features are user friendly.
- Conduct a data analysis from user data from the cloud to assess the effectiveness of each product feature.
- Create and implement test plans to verify software functionality and usability prior to conducting the user trial.

Initiative:

- Support in validating the dual source LCD capabilities by creating the test plan for in-house and external testing.
- Ensure LCD samples dimension full fill Dyson requirement standard in manufacturing process, such as using 6 sigma/CPK.
- Risk Assessment on LCD sample to ensure sample follow Dyson FMEA standard.
- Support internal team in developing python module to create feature for automating elementary functions, such as data acquisition, data mining, flashing tools etc. Framework like Pandas, NumPy, Regex, take place in this event.

Biggest Achievement in this team:

- At the outset of the Big and Quiet Dyson Environment Care project, neither the software nor the electronic hardware was prepared. In anticipation of demonstrating the new features through proof of concept, I effectively integrated and designed both the software and electronic modules to enable full product mode functionality.
- Upon joining the team as a pioneer, I observed that they primarily utilized Figma and whiteboards for demonstrating UI behavior. To enhance the method of showcasing UI flow, I took the initiative to design a UI dashboard using Pygame.

Platform Software Engineer in UST Global (Penang)

2019 January – 2019 August

Job Description:

- Responsible for supporting reported platform software related technician issue regarding Bios Firmware from Intel products.

Mission / Accomplishments:

- Understand the flow/importance of Basic Input/Output System that is built into a computer's mother board.
- Provide solution to client for initializing and configuring the software setting in correct manner.
- Help clients to check on the compatibility between OS and BIOS ensure that the operating system can properly utilize and interact with the computer's hardware components.

2017 Internship – 3 months

Mission / Accomplishment:

- Design a GUI system for Arduino controller interface using C#.
- Design milliohm and auto – ranging ohmmeter, tasks include debugging circuit board & perform ADC feature using Arduino.

2018 Final Year Project

Introduction:

The task entails crafting a stepper motor controller utilizing the FPGA Cyclone IV platform, coupled with wireless communication facilitated by Xbee modules operating via UART protocol.

Mission / Accomplishments:

- The controller is engineered to offer precise angle positioning and adjustable speed control, enhancing versatility and operational efficiency.
- Test bench is employed to verify the correct sequencing of data acquired through ModelSim on the FPGA.
- Graphical user Interface (GUI) is developed using .NET C# Window Forms to wirelessly transmit commands, via UART, to FPGA.

Education

2013 – 2018 Bachelor's degree in electronic Majoring in Telecommunication

Melaka, Multimedia University (MMU)

CGPA – 2.56/4.0

Muet – Band 3

2013 Foundation in Engineering

Melaka, Multimedia University (MMU)

CGPA – 3.13/4.0

2006 – 2011 Sekolah Menengah Chung Hwa Wei Sin

Kuala Terengganu

5A, 2B,2C, 1D

Language

Level Rating 0 -10

Language	Spoken	Writing
Chinese	8	8
English	8	8
Malay	8	8