ONG ROEY YEE

Mechatronic System Engineer | Software – Dyson R&D

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/data relevant where I can contribute via using my technical solving skills and analytic abilities.

MY ABILITIES

- Collaborated with cross – functional teams to understand problem statements and delivered technical solutions by designing and developing proofs of concept for new features.
- Performing data analysis on user data to ensure new product features aligned with business needs.
- Various software testing methods including Black/White Box, unit test & integration testing.
- Demonstrating proficiency in creating/design software scripts and UML diagrams (state, class, sequence) for optimal software development.
- Evaluating algorithms using Big O notation to analyze their efficiency and scalability.
- 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.
- Utilizing statistical methods and Six Sigma methodology to monitor and analyze manufacturing process.
- Experienced in conducting Gauge Repeatability and Reproducibility (GR&R) studies to analyze both variations of gauging instruments.

MY SKILLSET

- Proficient in scripting languages such as Python, .Net C#, and C/C++, with familiarity in both Linux and Windows operating systems environments.
- 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 microcontroller/raspberry pi to transmit and receive lightweight data over a resource-constrained network using MQTT/http protocol.
- Proficient in both SQL (SQLite 3) and NoSQL (MongoDB) database management systems to optimize data storage, retrieval, and manipulation processes.
- Develop machine learning model for prediction for prediction, utilizing either supervised or unsupervised learning techniques.
- Familiar with data visualization tools like JMP/matplotlib/Power Bi.
- Fundamental understanding on REST API to create end point for backend use case via Flash/Django.
- Executed data acquisition through I2C, UART, and SPI hardware communication protocols, and demonstrated basic usage of InterruptService Routines (ISRs) for improved system responsiveness.
- Experienced in using hardware measurement tools such as Power Analyzer, Oscilloscope, Logic Analyzer.
- Utilize LabView for machine data acquisition.

MY EXPERIENCES

Mechatronic System Engineer | Software R&D

August 2022 – Present (Dyson Tech Department)

Job Description:

- This position sits within a division of the Dyson Technology department, dedicated to advancing the development of new technologies across all Dyson product categories. By leveraging a unique blend of software, mechanical, and electronic expertise, we aim to innovate full-stack platforms or tools for data acquisition, data analysis, machine learning, and research, which are utilized by Dyson engineers globally. This initiative aligns with the principles of Industry 4.0 (IR 4.0) and the Internet of Things (IoT), ensuring that our solutions remain at the forefront of technological advancements in connectivity.

- This role also involves contributing to the ownership of product intelligence features. In this capacity, we will play a key role in shaping and overseeing the development and implementation of features that enhance the product's intelligence capabilities.

(Personal project): Develop IOT Logger Device

Introduction:

The objective of this logger is to enable machine measurement capabilities across various parameters including voltage, current, motor speed, pressure, and temperature. It serves to fulfill characterization requirements, simulate software features, and ultimately gather user trial feedback. Moreover, it acts as a versatile wrapper logger/adaptor, enabling smooth 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.
- Develop data acquisition & control module to communicate with machine via hardware protocol (UART & I2C).
- Develop Graphical User Interface on Raspberry Pi to let user to control the configuration setting via LCD touch screen via Flask framework.
- Implement Selenium for automated testing of the Flask UI components.
- Real time data will be captured, transmitted to Influx DB server stored on AWS, and visualized using Grafana.
- Unit test framework needs to be executed to ensure the software is robust.
- Deploying software using Balena dashboard involves utilizing docker's platform to manage and deploy containerized application to a fleet of devices.

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:

- 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.
- Taking initiative to train a machine learning model using decision trees for image processing, specifically to capture floor images post-cleaning.

Second Project: Heater System Tester Data Acquisition Module

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 the crossroads of hardware and software bridging the gap between our digital and physical Environment Care Products. Our focus lies in acquiring, designing, developing, and validating concepts research by our New Product Innovation (NPI) team. This ensures that our innovative technologies and features not only meet but exceed expectations, offering 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.
- Analyze user data from cloud to evaluate product feature effectiveness and provide insights for potential cost reduction.
- 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.
- Create and implement test plans to verify software functionality and usability prior to conducting the user trial.
- Establish user trial activities at various milestones to gather user data and feedback to refine and optimize product features iteratively.

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 beginning of the Big and Quiet Dyson Environment Care projects, both the software and electronic hardware were unprepared. To showcase new features via proof of concept, I adeptly integrated and designed both components to enable full product UI-UX 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 where able to be use in hardware as well.

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:

- Utilizing C# window form, develop a comprehensive graphical user interface (GUI) capable of effectively visualizing data obtained from CNC machines. This GUI will serve as a sophisticated platform for seamlessly displaying and interpreting various metrics and parameters extracted from CNC operations.

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.

LANGUAGE FAMILIARITY

Level Rating 0 -10

Language	Spoken	Writing
Chinese	10	7
English	8	9
Malay	8	9

MY 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