EUGENE HUANG XIN ZHE

Year 4 M.ENG. HONS ELECTRICAL AND ELECTRONICS ENGINEERING STUDENT

About Me

Currently a Final Year university student (JPA Scholar) looking for a Full-Time Job

+6011-1796 3133

eugenehh2016@gmail.com

linkedin.com/in/eugenehuang33

Portfolio Website Link

Lot 6937, Desa Pujut, Bandar Baru Permyjaya, 98000, Miri, Sarawak

OBJECTIVE

- Keen interest in automation, and silicon design. Eager to contribute and acquire knowledge and experience from industry professionals,

EDUCATION

- **University of Nottingham Malaysia**

  Foundation in Engineering (completed)

  M.Eng Electrical and Electronic Engineering (September 2022- May 2026)

- **SMK Chung Hua (CF) Miri**

  Sijil Pelajaran Malaysia (SPM)

ACHIEVEMENTS

- SPM - 10A+
- Foundation - 90 %
- Year 4 - 81 %

EXPERTISE

- **HDL / RTL Design**

  VHDL, RTL Design, FSM, ModelSim, Xilinx ISE, Testbench Development

- **VLSI & Layout**

  MICROWIND, CMOS Layout, DRC, Transistor Sizing, Capacitance & Delay Analysis

- **Programming Languages**

  C, C++, Python, SQL, HTML, CSS, Javascript, MERNstack

- **Embedded Systems**

  Spartan-3E FPGA, Arduino Uno, Raspberry Pi, STM32

PROJECTS

- **Photodetector-guided Robot Vehicle (2022)**

  Constructing a line following, multi-purpose robot car using self designed IR sensors, Ultrasonic sensor, gyroscope accelerometer, Bluetooth Serial Transceiver and encoder.

- **Smart Vision Robot Vehicle (2023)**

  Constructing a 4WD robot car with the ability to follow coloured lines, detect shapes and signs and carry out face recognition using Raspberry Pi 4, Python, OpenCV, Raspberry Pi Camera module and L298N Motor driver module.

- **Switch Mode Power Supply Design Project (2024)**

  Designing PWM circuit, retification circuit and two-switched forward converter involving PCB design and construction, PLECS simulation.

- **Simulation Tools**
  LTSpice, PLECS, MATLAB, SIMULINK, FEMM
- **Machine Learning**
  PyTorch

SEMICONDUCTOR PROJECTS

RS232 UART Design (VHDL, FPGA)

- Designed complete UART transmitter and receiver using VHDL with FSM-based control, clock division, synchronization, and debouncing logic.
- Developed comprehensive testbenches in ModelSim for functional and timing verification.
- Synthesized and implemented the design on Spartan-3E FPGA with successful PC-FPGA communication validation.

Temperature Measurement System with SPI Interface

- Built a VHDL-based temperature controller using SPI to interface with MAX6675 ADC.
- Implemented SPI master, data conversion logic, memory (DPRAM) storage, and LED/LCD display controllers.
- Verified functionality through simulation and hardware testing on FPGA platform.

CMOS Inverter & Logic Layout Design (MICROWIND)

- Designed custom CMOS inverter and combinational logic circuits at layout level using MICROWIND.
- Performed DRC, transient/DC simulation, capacitance extraction, and propagation delay analysis.
- Optimized transistor sizing to study performance trade-offs in switching voltage, delay, and power.

EXTRA CURRICULAR ACTIVITIES

- **Robot Car Maze Competition (Champion)**

Arduino Robot car is programmed to do mapping of the entire maze using depth first search algorithm with ultrasonic sensor, then using breadth first search to find the shortest path, and finally executing path execution using gyroscope and encoder.

- **Doppler Radar based Speed Detector Project (2024)**

Designing bandpass filter, detecting speed using STM32 ADC and comparator, using microwave sensor module, LCD keypad shield, oscilloscope, function generator and STM32 microcontroller.

- **Wild Life Detection Project (2024 - 2025)**

Develop real time object detection models for vision and audio using Tensorflow, build MERN stack website, interfacing raspberry pi 5 microcontroller with website database, while utilizing solar power for system operations.

- **Crowd Monitoring with Federated Learning (FYP 2025 - 2026)**

Develop real time crowd monitoring system using PyTorch MCNN models and density mapping methods, integrated with federated learning mechanism for improve performance. Building complete MERN stack website for crowd status and federated training statistics and control, with alert system.

ViTrox Technologies Sdn. Bhd.
ABI-AXI Department R&D Intern

- Develop turing imaging simulator with PyQt5
- Integrating Strobe Mode Camera hardware for backend to frontend using Java and JavaFx
- Motion Compensation Algorithm research, implementation and testing using Transformation Matrices and Best Fit Numerical Methods with OpenCV and Python
- Data Collection and Analysis of Gantry Correction testing on Area Scan X-Ray Inspection System
- Data Analysis and Plotting automation using Python

Huawei Technologies Sdn. Bhd.
GSRC Department - Core Network + TMO Intern

Core Network

- Learn core network fundamentals, VoLTE registration, attach and call flow process between mobile operators subscribers, IP networking basics.
- Learn IP networking protocols, architecture, internet encryption methods.

Technical Management Office (TMO)

- Develop automation tools using python and internal scheduler tool to improve productivity of processes.
- Develop summary dashboards using DataFab, Datalink and GDE platform with SQL as the backend to filter and extract data from database.
- Develop API calling script to improve efficiency of tools.