VAN VU TRUONG

Da Nang, Vietnam | truongvanvuvta1@gmail.com | +84 96 852 3341 | Portfolio

linkedin.com - truong van vu | GitHub - truongvanvuembedded

Education

Danang University of Science and Technology (DUT), Da Nang, Vietnam   2019 – 2023
- Major: Bachelor of Engineering in Mechatronics Engineering

Professional Interests

- Embedded Software & Firmware Development: Bare metal and Event-Driven programming.
- Microcontrollers (ARM Cortex-M, ESP32, STM32, Renesas).
- Embedded Software Testing: unit, integration, comprehensive and system test.
- Embedded Software Design: System, basic and architecture design.
- Automation: scripting and tooling to improve development efficiency.

Professional Experiences

Internship: Tan Long F&B Da Nang   07/2023 – 12/2023
Project: Dish-Washer machine
- Responsibilities: Designed and implemented the full pipeline from scratch: data analysis, data engineering workflows, computation, system design, and software and hardware development.

Embedded Software: **ASTI Research and Development Vietnam (On-Site)**   01/2024 – present
Project 1: AGV – Automated Guided Vehicle
- Responsibilities:
  - Tune and optimize line following algorithm for factory environment
  - Calibrate sensors to improve path detection accuracy
  - Debug and validate system performance during real operation
- Achievements:
  - Improved path detection accuracy

Project 2: Ebike – Vehicle Control Unit for Electric Bike
- Responsibilities:
  - Analyzed system requirements and performed basic to detailed software design.
  - Designed layered embedded software architecture (HAL / Middleware / Application).
  - Developed firmware modules for vehicle control and safety logic.
  - Create and implement units, integration, comprehensive, and system tests.
  - Debug and validate system performance during operation.
  - Design mechanisms to protect and synchronize data.
  - Design and develop firmware update mechanisms.
- Achievements:
  - Delivered stable and production-ready VCU firmware for electric bike.
  - Successfully validated VCU firmware with stable real-world vehicle operation.

Project 3: NMEA 2000 IOT – Marine controller.
- Responsibilities:
  - Implement NMEA 2000 parameters such as fuel level, engine data, and navigation information
  - Render real-time vessel data on the onboard display
  - Develop communication with backend server to monitor via web.
  - Develop BLE communication to monitor via mobile app.
  - Research and integrate GNSS positioning using SIM module
- Achievements:
  - Delivered a marine IoT controller compliant with NMEA 2000 standard.
  - Enable real-time monitoring onboard display and remote application.
  - Increase accuracy in tracking.

Project 4: MPP Charger System.
- Responsibilities:
    - Analyzed system requirements.
    - Solely responsible for the end-to-end firmware development of the MPP Charger System.
    - Develop communication with MPP and Bidirectional Converter to synchronous data and control.
    - Designed and implemented system state management and safety mechanisms.
    - Debugged and validated system behavior during charging and discharging modes.
    - Developed Python-based simulation and monitoring tools for debugging and evaluation.
    - Implemented data logging mechanisms to record system data during error conditions in released products.
    - Implemented user interface display for system status and operational information.
- Achievements:
    - Released a stable firmware version, currently undergoing long-term system testing and logging for evaluation prior to production release.
    - Domain: Power Electronics, Energy Management

Project 5: MPP Charger.
- Responsibilities:
    - Study and understand existing hardware and software architecture.
    - Read and analyze hardware schematics.
    - Debug firmware to understand system behavior.
    - Implement new features based on customer requirements.
    - Perform functional testing before release
- Achievements:
    - Released a new feature to customers.

Skills

Programming Languages
- C, C++, Python

Embedded Systems
- MCU: STM32, ESP32, Renesas, Arduino
- RTOS: FreeRTOS
- GUI: LVGL

Communication & Protocols
- CAN, NMEA 2000
- UART, SPI, I2C, RS485
- HTTP, MQTT
- BLE, Wi-Fi
- NCI

IoT & Connectivity
- GNSS positioning (AssistNow Online / Offline, Cloud-Locate, Cell-Locate)
- SIM-based cellular communication

Testing & Debugging
- Unit testing: Ceedlings
- Debugging: JTAG, SWD, OpenOCD.
- Tools: Logic Analyzer, Oscilloscope
- CAN tools: Vector CAN, Kvaser.

Source control
- Git

Build & Development Tools
- CMake, Makefile, Docker
- OTA & Bootloader (OTA HTTPS)

Domains
- Electric Vehicle (VCU)
- Marine Systems (NMEA 2000)
- Power Electronics & Energy Management
- Robotics (AGV)

Others: Problem Solving, Teamwork, Time Management, GUI Design, Communication.

Professional Certificates

- Level-Up C
- Mastering Micro Controller and Embedded Driver Development
- C Programming for Embedded Applications
- Test-Driven Development in C++