Do Anh Tu | Mobile No.: +65 9059 0639 | Email: anhtu.do1998@gmail.com
GitHub: https://github.com/AnhTuDo1998

WORK EXPERIENCE

Thales (Digital Identity & Security), Singapore Sep 2021 – Now
Embedded Software Engineer

- Analyse vulnerabilities in proprietary OS and implement secure low-level API calls in C language to mitigate these problems.
- Devise OS testing plan for 2 products working on ARM-based embedded secure elements with more than 100 test cases.
- Monitor code coverage of low-level OS module for use in Common Criteria certification process.

Nanyang Technological University, Singapore May 2021 – Jul 2021
Part-time Research Assistant

- Built embedded Linux images for Xilinx ZCU102 FPGA using Yocto Project and Petalinux tools to evaluate visual SLAM algorithms.
- Ported C++ based visual SLAM algorithms from x86-64 to aarch64 architecture by using Cmake scripts and cross-compilation toolchains for the target system.
- Evaluated throughput and data bandwidth of SLAM pipelines running on FPGA and NVIDIA Jetson Xavier NX platforms to recommend optimizations for ROS pipeline.

Thermo Fisher Scientific Pte Ltd Jan 2020 – Aug 2020
Firmware Engineer Intern

- Designed a Python-based command-line interface debugger for the firmware team's application protocol that consists of 7 messages and builds on top of CAN protocol.
- Prototyped a RTOS thread for controlling 4 electro-magnets in clockwise/anti-clockwise direction to provide a uniform electromagnetic field for a research scientist's usage in his research on cell biology.
- Set up Amazon FreeRTOS on NXP iMXRT1020EVK MCUs and tested its integration to AWS IoT services.
- Designed a low-level library for playing tunes on piezo buzzers to provide notification sounds to users in company's upcoming products.

EDUCATION

Nanyang Technological University, Singapore Jul 2017 – Jul 2021
Bachelor of Engineering (Computer Engineering)

- Dean's List for Academic Year 2018-2019 & 2020-2021
- CGPA 4.76/5.00
- Honours (Highest Distinction)
- Elective Focus in Artificial Intelligence and Data Science & Analytics

PERSONAL PROJECTS

Real-time Visual Localization System on an Embedded Platform
Final Year Project

- Developed 2 modular, distributed semantic visual SLAM pipelines with 3.2 fps pose estimation throughput as backbone for 3D semantic mapping system.
- Evaluated Pytorch semantic segmentation models and 2 optimization strategies to minimizing their inference time on NVIDIA Jetson Xavier NX platform.
- Integrated Python 2D segmentation models with C++ functions of ORB-SLAM2 visual SLAM system into a novel, light-weight SLAM system that is less prone to error from dynamic environments.
- Designed a ROS node in Python to create 3D semantic pointclouds to build 3D occupancy grid maps in a probabilistic manner.

- Report: https://dr.ntu.edu.sg/handle/10356/148230

CHIP-8 Emulator

- Implemented a subset of 35 opcodes supported by CHIP-8 virtual machine and their fetch-decode-execute cycle in Rust.
- Modelled the hardware specifications (RAM, registers, buffer) of CHIP-8 platform as Rust modules
- Implemented input/output events using a Rust wrapper for Simple DirectMedia Layer library for used on Linux platforms.

Newsletter System

- Implemented APIs for the backend with Rust's actix-web framework and Postgres.
- Setup docker container for intention of deploying application to DigitalOcean.
- Setup CI/CD pipeline using GitHub Actions and Rust open-source tools to format and lint code, to analyse code coverage and to get alert of possible vulnerabilities in the crates/libraries used.

SKILLS

Programming Languages: C/C++, Python, Rust, Bash.
Source Code Version Control: Git, SVN, MKS.
Development Platforms: Linux/Unix.
CI/CD Tools: GitHub Actions, Docker.
Opensource Tools: Cmake, Vim, GNU tools (gdb, gcc, etc).

OTHERS

Citizenship: Vietnamese
Languages: Vietnamese (native), English (bilingual)

REFERENCES

Assoc. Prof. Lam Siew Kei (FYP/Part-time Job's Supervisor)
School of Computer Science and Engineering
Nanyang Technological University, Singapore
Email: assklam@ntu.edu.sg

Mr. Shi Benyong (Internship Supervisor)
Email: shibenyong@gmail.com