Khoa Pham

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EDUCATION

Ho Chi Minh City University of Technology - VNU (HCMUT)   Sep. 2020 – July 2024
Bachelor's degree, Computer Engineering
- Coursework: Data structure and Algorithm, Computer architect, Programming fundamental, Operating system, Computer vision, Microcontroller unit.

EXPERIENCE

C/C++ Software Engineer   Sep 2022 – Present
OPSWAT Vietnam
- Design/Implement algorithm for encoding detection by building finite state machine, satisfy potential customers from Japan.
- Develop QR code sanitization from image file by integrate computer vision's framework, used by marketing team as highlight feature for product: https://www.opswat.com/blog/stop-qr-code-phishing-protect-critical-infrastructure.

PROJECTS

Monocular semantic scene completion on embedded system   Sep 2023 - July 2024
Capstone project   *Grade: 9.78/10*
- Convert point cloud based 3D semantic scene completion model into monocular base by adding depth module and pseudo-LiDAR, achieved 13.19 in mIoU metric.
- Reduce baseline computation cost by 17,77 % in FLoPS by proposing a structural pruning pipeline.

Guider device   January 2021 - September 2022
- Design and implement back-end module of end-to-end campus path planning software with Python and deploy onto Raspberry Pi, able to give users shortest path.
- Implement A* algorithm to find shortest path inside university campus, achieved an average of 0.3 seconds inference time when find the shortest path from a point to another.
- Support sending planned path in form of an image to users' phone via NFC by integrate NFC module to Guider device.

PUBLICATIONS

Optimizing 3D Semantic Scene Completion on Embedded Systems
2024 International Seminar on Intelligent Technology and Its Applications (ISITIA) - **Accepted**
- Research on 3D semantic scene completion baseline.
- Proposed optimization pipeline solution related to adaptive structural pruning on neural network, improved inference speed by 32%.
- Reduce overhead of the model, successfully deploy improved model onto Jetson Xavier NX embedded system by eliminate redundant computation.
- Write a framework for measuring performance metrics, successfully measure models' inference speed on Jetson Xavier NX using Python JTOP API.

PROGRAMMING SKILLS

Languages: C/C++, Python, Linux Scripting, Assembly, Javascript
Frameworks: PyTorch, Tensorflow, OpenCV (C++ and Python), Tensorboard, gtest, NodeJs
Tools: Git, CMake, Docker, Visual Studio, Jira, Confluence

MACHINE LEARNING KNOWLEDGE

Machine learning: Perceptron theory, MLP, neural network, Gradient Descent, Backpropagation

SOFTWARE ENGINEERING KNOWLEDGE

C/C++ knowledge: File processing, Basic pointer, OOP, Basic fundamentals
Embedded system knowledge: STM32, SPI, UART, I2C, Timer, GPIO Controlling