

Hoa Huynh

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ABOUT

I am a Computer Vision Engineer with over 5 years of experience developing and deploying real-time deep learning systems on edge devices for automotive safety and surveillance. I am passionate about designing 2D/3D perception deep learning models, optimizing inference pipelines, integrating multi-sensor data, and collaborating with cross-functional teams to deliver practical AI solutions that improve human well-being. Additionally, I continuously seek out cutting-edge technologies, enhance my skills, and grow alongside the amazing people around me.

RESEARCH INTERESTS

Visual SLAM, 3D Vision, Robotics, Automotive, Edge Deployment

SKILLS

Programming Languages: C, C++, Python, C#, Java, JavaScript, MATLAB

Frameworks: Open3D, PCL, OpenCV, PyTorch, TensorFlow, Darknet, ONNX, TensorRT, TFLite, TIOVX, DeepStream, FFmpeg, Qt

MLOps & Tools: Git, SVN, Docker, TensorBoard, DVC, Weights & Biases, MLflow, CMake

SoCs: NVIDIA Jetson Nano/Xavier NX, Texas Instruments SK-TDA4VM/TDA4AEN, Samsung Exynos V920

Sensors: FLIR Thermal Camera, NIR Camera, Intel RealSense, LUCID Helios2 ToF Camera, Ouster LiDAR

Databases: Microsoft SQL Server, MySQL, SQLite, PostgreSQL, MongoDB

Operating Systems: Windows, Linux/Ubuntu, macOS, ROS

Languages: English (professional), Korean (elementary), Vietnamese (native)

EXPERIENCE

DeltaX

Seoul, South Korea

Development Team Lead & AI Researcher

June 2022 – July 2026

- Since December 2023, led a Research & Development team responsible for the development and delivery of an In-Cabin Monitoring System (ICMS), overseeing technical architecture and roadmap definition, task allocation, weekly progress reviews, milestone management, partner/client demonstrations, and cross-functional collaboration:
 - * Designed and developed an ICMS compliant with Euro NCAP standards, incorporating proprietary innovations for continuous monitoring and assessment of driver and passenger states.
 - * Architected a real-time edge AI pipeline using a single RGB/IR fisheye camera, C/C++ inference on an SoC, and a Node.js/React web UI for visualization.
 - * Integrated up to 8 deep learning models for object detection, 2D/3D body keypoint estimation, facial landmark detection, gaze estimation, and image classification, achieving 14 FPS average end-to-end performance on an 8-TOPS compute platform.
 - * Successfully delivered 4 Proof-of-Concept (PoC) projects for 2 key Korean automotive vendors within aggressive 3 – 6 month timelines: 42dot (Phase 1: January – June 2024; Phase 2: August – October 2024), Pyeong Hwa Automotive (Phase 1: May 2024 – January 2025; Phase 2: July – October 2025).
- Customized PyTorch models and optimized Python/C++ integration pipelines for SoC deployments.
- Deployed on TI SK-TDA4VM/TDA4AEN using Edge AI + TIOVX frameworks, and on Samsung Exynos V920 using an ONNX Runtime-based framework.
- Developed lightweight 2D/3D perception models and algorithms spanning facial analysis, semantic segmentation, monocular depth estimation, pseudo-LiDAR, visual SLAM, real-time multi-camera stitching, and head pose estimation.
- Worked with RGB/IR pinhole and fisheye cameras and LiDAR/RGB-D supervision to develop perception solutions for human localization and safety monitoring, 3D display, and advanced driver assistance systems (ADAS).

- Built and maintained utilities for multi-sensor calibration, data collection, and analysis using ROS, MATLAB, and Python.
- Developed a dataset preprocessing algorithm inspired by “SAHI: Slicing Aided Hyper Inference” to improve recall on small objects for YOLOv8-p2/YOLOv9n models while maintaining real-time inference latency.

Smartdeep

Research Engineer

Seoul, South Korea

May 2021 – May 2022

- Built a multi-camera surveillance system aligned with KISA Intelligent CCTV Certification using C++ (OpenCV + FFmpeg) and a C# WPF GUI. The system supports up to 16 CCTV streams simultaneously and can detect, record, and search predefined events by analyzing moving or abnormal objects.
- Contributed to the full lifecycle of Darknet YOLOv4-based object detection models by curating datasets and optimizing the training and validation pipeline.

Ubay Solution

AI Research Intern

Seoul, South Korea

December 2020 – April 2021

- Developed an optical character recognition (OCR) system for deployment at Busan Port, enabling automated detection and recognition of truck license plate numbers and container codes.
- Evaluated the performance and reliability of object detection frameworks (SSD, YOLOv4, Faster R-CNN, etc.) on a custom dataset.
- Applied data augmentation and web crawling techniques to increase dataset size and quality.
- Implemented a DeepStream + TensorRT pipeline on NVIDIA Jetson Nano and Jetson Xavier NX for real-time inference.

ANDA Lab – Soongsil University

Research Assistant

Seoul, South Korea

September 2018 – August 2020

- Conducted research and experimental analysis using Python, OpenCV, and MATLAB to diagnose issues in a vehicle localization system centered on taillight detection and processing.
- Composed scientific papers proposing solutions to address the identified issues.

Global Cybersoft JSC

Software Engineer Trainee

Ho Chi Minh City, Vietnam

March 2017 – August 2017

- Developed C++ Microsoft Foundation Class (MFC) plugins for SCREEN Holdings Co.’s industrial printer system (Japan).
- Developed Adobe Illustrator plugins using the Adobe Illustrator SDK, C++, and JavaScript for an advertising agency (Japan).
- Improved code quality and team collaboration by participating in Jira-based peer code reviews.
- Gained hands-on experience in an agile software development environment.

EDUCATION

Soongsil University

Master of Engineering, Information Communication

Seoul, South Korea

September 2018 – August 2020

- **GPA:** 4.01/4.5
- **Thesis:** LED Taillight Matching Algorithm for Nighttime Vehicle Positioning
- **Ref:** oasis.ssu.ac.kr/search/i-discovery/edsker:edsker.000004851619?type=eds (English)
- **Advisor:** Professor Myungsik Yoo

University of Information Technology – Vietnam National University

Bachelor of Engineering, Software Engineering

Ho Chi Minh City, Vietnam

August 2013 – June 2018

- **GPA:** 8.6/10 (Salutatorian Honors)
- **Thesis:** Coronary Arteries Segmentation from Coronary Angiogram
- **Ref:** drive.google.com/file/d/1RyIFqRy-xywZG1zEWEX2l3B49T7XbFvf/view (Vietnamese)
- **Advisor:** Professor Thi-Vuong Pham

PUBLICATIONS

(**I**: International Journal, **W**: International Workshop, **K**: Korean Domestic Journal/Conference)

K. Uddin S M Nadim et al. (including **Huynh Thai Hoa**), “A Railway Framework for Person (Worker) Localization based on Depth Estimation and GPS”, *The Korean Institute of Defense Technology Fall Conference* (2024). Ref: kidet.or.kr/index.php?page=view&pg=&idx=1259&hCode=BOARD&bo_idx=1&sfl=&stx=

W. Jamie Spencer et al. (including **Huynh Thai Hoa**), “The Second Monocular Depth Estimation Challenge”, *Conference on Computer Vision and Pattern Recognition Workshops* (2023). Ref: arxiv.org/abs/2304.07051

I. **Thai-Hoa Huynh**, Myungsik Yoo, “A Taillight Matching and Pairing Algorithm for Stereo-Vision-Based Nighttime Vehicle-to-Vehicle Positioning”, *MDPI Applied Sciences* (2020). Ref: mdpi.com/841776

K. **Thai-Hoa Huynh**, Myungsik Yoo, “Nighttime LED Taillight Detection Method with Optical Camera Communication System”, *Journal of Korean Institute of Communications and Information Sciences* (2020). Ref: dbpia.co.kr/journal/articleDetail?nodeId=NODE10440000

I. **Thai-Hoa Huynh**, Tuan-Anh Pham, Myungsik Yoo, “Detection Algorithm for Overlapping LEDs in Vehicular Visible Light Communication System”, *IEEE Access* (2019). Ref: ieeexplore.ieee.org/document/8792184

SELECTED CERTIFICATIONS

Hugging Face:

- Fundamentals of Large Language Models (2025)
- AI Agents Fundamentals (2025)
- Fundamentals of Group Relative Policy Optimization (2025)

Coursera:

- Introduction to Machine Learning in Production (2024)

HackerRank:

- Problem Solving – Intermediate (2024)

Leetcode:

- 500 Days Badge (2026)
- Introduction to Pandas (2024)

Kaggle:

- Computer Vision (2022)
- Feature Engineering (2022)
- Time Series (2022)

(Full certification list available on portfolio website: huynhthaihoa.github.io/#certifications)