Krittin Chaowakarn

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EDUCATION

08/21 - Present **Bachelor of Engineering in Electrical Engineering** | Phathum Thani, Thailand
Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU)

- Fully funded by the Young Scientist and Technologist Program (YSTP), National Science and Technology Development Agency (NSTDA), Thailand
- Relevant coursework: Robotics, Linear Algebra, Feedback and Control Systems, Probability and Random Processes
- GPA: 3.87/4.00 | **Expected First-Class Honor**

04/25 - Present **TUMExchange (Exchange Semester)** | Munich, Germany
Technical University of Munich (TUM)

- Relevant coursework: Multimodal Deep Learning, Software Engineering, Bachelor Thesis

RESEARCH EXPERIENCE

04/25 - Present **Bachelor Thesis Student** | TUM, Munich, Germany
The Chair of Integrated Systems

- Research real-time object detection using Duckietown, an open-source platform for autonomous vehicle education and experimentation
- Develop a YOLO object-detection system optimized via ONNX for NVIDIA Jetson Nano, achieving 37.5$\times$ speedup from 7.5s (CPU) to 0.2s (GPU)
- Collect an image dataset from real-world environment, applies k-means clustering on YOLO embeddings (L2-normalized in unit hypersphere) to reduce $\approx$1000 images to 119 distinct samples

01/25 - 03/25 **Technical Collaborator (Senior Project)** | SIIT, Phathum Thani, Thailand
School of Information, Computer, and Communication Technology

- Contributed to a multi-robot formation research using Yahboom robots and ROS 2, supporting human-following functionality through simulation in Gazebo
- Deployed a computer vision system enabling a robot to recognize and track a target human using YOLO for detection, DeepSORT for tracking, and face recognition for identity verification

06/23 - 04/25 **Undergraduate Researcher** | NSTDA, Phathum Thani, Thailand
Spectroscopic and Sensing Devices Research Group

- Conducted research on LiDAR-based 3D object detection for autonomous vehicles with the integration of local features, using PyTorch, SpConv, and OpenPCDet
- Accelerated data processing by 6.67$\times$ through CUDA C++ parallelization, cutting runtime from 0.10s (PyTorch) to 0.015s
- Achieved 86.60, 59.91, and 80.18 mAP for car, pedestrian, and cyclist detection; research under review at *Image and Vision Computing* (Elsevier Q1)

06/22 - 07/22 **Research Assistant Intern** | NSTDA, Phathum Thani, Thailand
Spectroscopic and Sensing Devices Research Group

- Performed a deep feedforward neural network using TensorFlow for mmWave beam and blockage prediction utilizing Sub-6 GHz signals
- Designed and implemented a data preprocessing pipeline to transform complex multidimensional Sub-6 GHz signal inputs for model training

TEACHING/ACADEMIC EXPERIENCE

01/23 - 05/25 **Teaching Assistant** | SIIT, Phathum Thani, Thailand
Assisted in 6 Undergraduate Courses (1 Lab TA and 5 Grading Roles)

- Electromagnetics (01/24 - 05/24, 01/25 - 05/25)
- Digital Circuits Laboratory (08/24 - 12/24)
- Linear Algebra and Optimization Method (08/24 - 12/24)
- Computational Tools in Electrical Engineering (08/23 - 12/23)
- Basic Electrical Engineering (01/23 - 05/23)

WORK EXPERIENCE

06/24 - 07/24 **AI Engineer Intern** | BOTNOI, Bangkok, Thailand
Natural Language Processing Team

- Developed Thai SNOMED-CT using machine translation, achieving over 80% improvement in resolving translation ambiguities ($\approx$ 70 out of 86 issues solved from a dataset of 385)
- Designed algorithms to match Thai and English sentences from books based on sentence embedding and similarity, reducing manual matching time by 80 % (50 hours to 10 hours)
- Performed statistical analysis on Thai-English sentence pairs to select optimal training data, then fine-tuned the machine translation model for book translation

HONORS AND AWARDS

08/21 - 05/25 **Scholarship Recipient** | SIIT, Phathum Thani, Thailand
Outstanding Student Program (OSP)

- Granted Young Scientist and Technologist Program (YSTP), a full scholarship to study at SIIT from National Science and Technology Development Agency (NSTDA), Thailand

11/24 **Second Place** | SIIT, Phathum Thani, Thailand
CASE for Southeast Asia Debate Competition

- Awarded second place in the debate on *Energy Transition: An Opportunity for Thailand*, organized by CASE for Southeast Asia

10/23 - 01/24 **Top 100 Team – KPIT Sparkle 2024** | Online
KPIT Sparkle 2024

- KPIT Sparkle 2024 is a global student innovation contest focused on solutions for vehicle technologies
- Proposed a risk assessment system for surrounding vehicles based on their driving behaviors, helping a driver with situational awareness and assisting insurance companies in evaluation

11/23 **Scholarship Recipient** | Keio University, Kanagawa, Japan
Keio University International Workshop 2023

- Selected as one of the 12 institute representatives for the workshop, and participated in the Keio University Laboratories, and cultural exchange with the Japanese students

EXTRACURRICULAR ACTIVITIES

01/23 - 05/25 **Vice President** | SIIT, Phathum Thani, Thailand
Electrical Engineering Students Council

- Supported and facilitated faculty activities as an institutional coordinator

10/23 - 05/24 **ML/AI Team Lead** | TU, Phathum Thani, Thailand
Google Developer Student Club

- Arranged and delivered the keynote speech at a workshop on *Introduction to Machine Learning and Its Application* for 35 participants at the bachelor's level

11/23 **Head of the Workshop** | SIIT, Phathum Thani, Thailand
Kids In Control Workshop 2023

- Organized a control system and fundamental programming workshop, and led 28 students to teach middle schools students

07/23 **Technical Assistant** | NSTDA, Ratchaburi, Thailand
Historical site 3D information gathering with LiDAR

- Collaborated on a 3D scanning project with NSTDA, using LiDAR to scan a historical site in support of advancing Thai history education

SKILLS

Programming : Python, Java, C/C++, MATLAB, SQL

AI/ML and Robotics (Python): PyTorch, ONNX, scikit-learn, OpenCV, ROS 2

Tools & Environments : Linux (CLI, Bash), Git, Docker, LaTeX

Thai : Native

English : Professional user (approx. C1)

German: Basic user (approx. A1)