

# Krittin Chaowakarn

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## EDUCATION

- 08/21 - Present     **Bachelor of Engineering in Electrical Engineering** | Phatum 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)*
- Thesis: "Real-Time Object Detection for Autonomous Driving: An Empirical Study in a Small-Scale Urban Environment" under the supervision of Prof. Dr. Andreas Herkersdorf
  - Relevant coursework: Multimodal Deep Learning, Software Engineering, Bachelor Thesis

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## RESEARCH EXPERIENCE

- 04/25 - Present     **Bachelor Thesis Student** | TUM, Munich, Germany  
*The Chair of Integrated Systems*  
*Supervisor: Prof. Dr. Andreas Herkersdorf*
- 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× 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 ≈1000 images to 119 distinct samples
- 01/25 - 03/25     **Technical Collaborator (Senior Project)** | SIIT, Phatum Thani, Thailand  
*School of Information, Computer, and Communication Technology*  
*Supervisor: Assoc. Prof. Dr. Itthisek Nilkhamhang*
- 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, Phatum Thani, Thailand  
*Spectroscopic and Sensing Devices Research Group*  
*Supervisor: Dr. Paramin Sangwongnam and Assoc. Prof. Dr. Chalie Charoenlarnopparut*
- 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× 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, Phatum Thani, Thailand  
*Spectroscopic and Sensing Devices Research Group*  
*Supervisor: Dr. Paramin Sangwongnam*
- 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

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## TEACHING/ACADEMIC EXPERIENCE

- 01/23 - 05/25     **Teaching Assistant** | SIIT, Phatum 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)

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## 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

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## HONORS AND AWARDS

- 08/21 - 05/25     **Scholarship Recipient** | SIIT, Phatum 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
- 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

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## EXTRACURRICULAR ACTIVITIES

- 01/23 - 05/25     **Vice President** | SIIT, Phatum Thani, Thailand  
*Electrical Engineering Students Council*
- Supported and facilitated faculty activities as an institutional coordinator
- 10/23 - 05/24     **ML/AI Team Lead** | TU, Phatum 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, Phatum Thani, Thailand  
*Kids In Control Workshop 2023*
- Organized a control system and fundamental programming workshop, and led 28 students to teach middle schools students

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## 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)