Curriculum Vitae

Khattiya Pongsirijinda

CONTACT INFORMATION

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LANGUAGES

- **English** (Advanced)
- **Chinese** (Intermediate)
- **Thai** (Native)
- **Russian** (Basic)

EDUCATION & RESEARCH EXPERIENCE

- **Postdoctoral Research Fellow** 2025–Present
  School of Electrical and Electronic Engineering (EEE)
  Nanyang Technological University (NTU), Singapore
  Supervisor: Assoc. Prof. Chau Yuen
  Nanyang Technological University (NTU), Singapore

- **PhD Engineering Product Development** (GPA: 4.93/5) 2021–2025
  Singapore University of Technology and Design (SUTD), Singapore
  Thesis: Advanced Collaborative Multi-Robot Exploration Strategies for Challenging and Constrained Scenarios
  Supervisors: Assoc. Prof. Chau Yuen
  Nanyang Technological University (NTU), Singapore
  Assoc. Prof. U-Xuan Tan
  Singapore University of Technology and Design, Singapore

- **MSc Data Science** (GPA: 4.51/5) 2019–2021
  Skolkovo Institute of Science and Technology, Russia
  Thesis: Analysis of Pedestrian Behavior for Different Social Force Models
  Supervisor: Prof. Nikolay Brilliantov
  University of Leicester, United Kingdom,
  Skolkovo Institute of Science and Technology, Russia
  Internship: Automated Molecular Dynamics Protocols for Soluble Proteins
  iMolecule, Skoltech, Russia

- **BSc Mathematics, First Class Hons** (GPA: 3.83/4) 2015–2019
  Silpakorn University, Thailand
  Thesis: Sequential Riemann Delta Integrals on Time Scales
  Supervisor: Asst. Prof. Sawanya Sakuntasathien
  Silpakorn University, Thailand

EDUCATION & RESEARCH EXPERIENCE

- **Research Student** 2018
  University of Nebraska–Lincoln, USA
  Topics: Real Analysis, Differential Equations
  Supervisor: Prof. Mohammad Rammaha
  University of Nebraska–Lincoln, USA

SCHOLARSHIPS

- **SUTD PhD Fellowship (HRH-SUTD Scholarship)** 2021–2025
  Ministry of Education, Singapore
- **HRH Princess Maha Chakri Sirindhorn Skoltech MSc Scholarship** 2019–2021
  Skolkovo Foundation, Russia
- **Development and Promotion of Science and Technology Talents Project Scholarship** 2015–2019
  Ministry of Education, Thailand

HONORS & RECOGNITIONS

- **PREMIA Best Student Paper Awards 2025 (Shortlisted)** 2025
  Title: MEF-Explore: Communication-Constrained Multi-Robot Entropy-Field-Based Exploration (Published in *IEEE TASE*)
  Venue: JTC LaunchPad, Singapore's Silicon Valley
  Organizer: Pattern Recognition and Machine Intelligence Association (PREMIA)
- **Fully Funded Practitioner (Top 16 Globally)** 2024
  UN-SIPRI Workshop on Responsible AI for Peace and Security
  Venue: Vrije Universiteit Brussel, Belgium
  Organizers: United Nations Office for Disarmament Affairs (UNODA) and Stockholm International Peace Research Institute (SIPRI)

RESEARCH ACTIVITIES

- **Publications** 2023–Present
  (The detailed list of publications is provided separately.)
  - **7 journal papers:** 3 as first author, 4 as co-author
    - 3 published in journals (*TASE*, *RAS*, *DSP*)
    - 4 additional manuscripts in progress
  - **2 conference papers** presented at *ROBIO*
- **Lead Developer – Robot Strategic Positioning** 2023–2025
  Project: Development of Robotic Indoor Tracking System,
  Home Team Science and Technology Agency (HTX), Singapore
- **Mentor for PhD and Master's Theses** 2023–2025
  School of Electrical and Electronic Engineering (EEE)
  Nanyang Technological University (NTU), Singapore

RESEARCH ACTIVITIES

- **Reviewer** 2023–Present
  Journals: *TNNLS, EAAI, TNSE, TMECH, TETCI, TASE, TAI, TCDS, Cluster Computing, IJMS*
  Conference: *ROBIO*
- **Conference Assistant** 2024
  Conference: *2024 IEEE Region 10 Conference (TENCON)*, Singapore
- **Guest Speaker – Distributed Multi-Robot Exploration** 2023
  Conference: *2023 International Conference on Robotics, Artificial Intelligence and Intelligent Control (RAIIC)*, China
- **Assistant for Experiments and Data Collection** 2021–2023
  Project: Beta Draconis (Multi-UGV Exploration for Collaborative Augmented Reality Support), Temasek Laboratories, Singapore University of Technology and Design, Singapore

TECHNICAL SKILLS

- **Programming Languages:**
  Python, C++, MATLAB
- **Robotics Frameworks:**
  Robot Operating System (ROS), Gazebo, RViz
- **Hardware Platforms & Sensors:**
  TurtleBot, Jackal UGV, Vision 60 Q-UGV, LiDAR, Ultra-Wideband (UWB)
- **Scientific & Technical Tools:**
  LaTeX, GitHub, Jupyter Notebook, Visual Studio Code
- **Experience Areas:**
  Multi-robot exploration, navigation, positioning, area coverage, applied mathematics in robotics, simulation, real-world deployment, scientific visualization & video editing

ACADEMIC LEADERSHIP & SERVICE

- **Graduate Teaching Assistant** 2023–2024
  Singapore University of Technology and Design (SUTD), Singapore
- **Clubs Coordinator, Student Council** 2020–2021
  Skolkovo Institute of Science and Technology, Russia
- **Academic Mentor (Higher Education Outreach Talk)** 2021
  International Gymnasium of the Skolkovo Innovation Center, Russia
- **Moderator and Speaker** 2019–2021
  Thai-Russian Education Roundtable
- **Instructor** 2016–2018
  Undergraduate pre-sessional mathematics course, Faculty of Science, Silpakorn University, Thailand
- **President, Student Council** 2015–2019
  Department of Mathematics, Silpakorn University, Thailand

List of Publications

Khattiya Pongsirijinda

JOURNAL PAPERS

- **K. Pongsirijinda**, Z. Cao, B. P. L. Lau, R. Liu, C. Yuen, and U-X. Tan, "MEF-Explore: Communication-Constrained Multi-Robot Entropy-Field-Based Exploration," *IEEE Transactions on Automation Science and Engineering*, vol. 22, pp. 16062–16078, 2025. DOI: 10.1109/TASE.2025.3575237

- **K. Pongsirijinda**, Z. Cao, K. Bhowmik, M. Shalihan, B. P. L. Lau, R. Liu, C. Yuen, and U-X. Tan, "Distributed multi-robot potential-field-based exploration with submap-based mapping and noise-augmented strategy," *Robotics and Autonomous Systems*, vol. 179, p. 104752, 2024. DOI: 10.1016/J.ROBOT.2024.104752

- **K. Pongsirijinda**, Z. Cao, B. P. L. Lau, R. Liu, C. Yuen, and U-X. Tan, "HyPer-Explore: Hybrid Perception-Driven Multi-Robot Graph-Entropy-Based Exploration," *Awaiting Submission*, 2025.

- M. Shalihan, Z. Cao, **K. Pongsirijinda**, B. K. K. Ng, B. P. L. Lau, R. Liu, C. Yuen, and U-X. Tan, "Localization through mitigating and compensating UWB NLOS ranging error with neural network," *Digital Signal Processing*, vol. 166, p. 105397, 2025. DOI: 10.1016/J.DSP.2025.105397

- A. Athukorala, B. P. L. Lau, **K. Pongsirijinda**, C. Yuen, U-X. Tan, "Multi-Robot Collaborative SLAM (Multi-SLAM) with Distributed Lightweight Predictive Frontier Exploration (LPFE)", *Under Review*, 2025

- B. P. L. Lau, **K. Pongsirijinda**, Z. Cao, M. Shalihan, R. Liu, C. Yuen, and U-X. Tan, "DCTM-RRT: Distributed and Communication-aware Temporal Memory-based RRT Exploration for Multi-AGV in Unknown Environment", *Awaiting Submission*, 2025.

- R. Liu, H. Ning, Z. Cao, L. Guo, **K. Pongsirijinda**, M. Shalihan, B. P. L. Lau, S. X. Yang, C. Yuen, and U-X. Tan, "D-UWB-SLAM: Distributed Ultra-Wideband Assisted LiDAR SLAM for Multiple Robots", *Awaiting Submission*, 2025.

CONFERENCE PAPERS

- **K. Pongsirijinda**, Z. Cao, M. Shalihan, B. K. K. Ng, B. P. L. Lau, R. Liu, C. Yuen, and U-X. Tan, "GMC-Pos: Graph-Based Multi-Robot Coverage Positioning Method," *2023 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, pp. 1–7. DOI: 10.1109/ROBIO58561.2023.10354990

- M. Shalihan, Z. Cao, **K. Pongsirijinda**, L. Guo, B. P. L. Lau, C. Yuen, and U-X. Tan, "Moving Object Localization based on the Fusion of Ultra-WideBand and LiDAR with a Mobile Robot," *2023 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, pp. 1–8. DOI: 10.1109/ROBIO58561.2023.10354904