Thaweerath **PHISANNUPAWONG**

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EDUCATIONS

August 2017 – July 2021

Bachelor of Engineering (First Class Honor) | Aeronautical Engineering and Commercial Pilot, GPA 3.97, Department of Aeronautical Engineering, International Academy of Aviation Industry (IAAI), King Mongkut's Institute of Technology Ladkrabang,(KMITL), Bangkok, Thailand

- Thesis article : Vision-based attitude estimation for spacecraft docking operation through deep learning algorithm
- Develop a vision-based spacecraft pose estimator using a pre-trained CNN model to determine spacecraft attitude and position using a high-resolution synthetic data. The trained model achieved moderately high accuracy in extracting the spacecraft's pose from the image.

August 2022 – Current

Master's degree candidate | Aerospace Engineering, MSc, Department of Aerospace Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, South

- Granted full financial support of KAIST International Student Scholarships
- Research fields : Aerospace Data Application, Time series analysis, Representation Learning.
- Thesis : Air Traffic Trajectory Contrastive Representation Learning.
- To facilitate the downstream classification and clustering, a contrastive learning framework is being developed to extract the representation of aircraft trajectories. The model utilizes the continuity of conducting air traffic procedures.

EXPERIENCES

August 2019 – July 2021

Researcher | Air-Space Control, Optimization, and Management Laboratory (ASCOM-LAB), IAAI, KMITL

- Alongside doing my thesis, I work as a researcher and a research assistant in many laboratory projects that involve guidance, navigation, and control combined with machine learning algorithms. Moreover, the works mainly focus on the frontier research of intelligence aircraft and spacecraft systems.

June 2020 – August 2020

Research Assistant | National Astronomical Research Institute of Thailand, NARIT, (Internship)

- During the internship period, the Vision-based pose estimator has been improved in its estimation performance and reliability with higher estimation accuracy. Also, the simulation software has been built in Autodesk Maya to simulate the spacecraft's motion. Furthermore, The simulator is capable of generating the training images and experimental data for the contribution of future research.

July 2021 – August 2022

Aerospace Engineer | Satang Space Company Limited, Bangkok, THAILAND, (Full-time)

- Since Satang Space Co. Ltd. is a spin off tech startup from Air-Space Control, Optimization, and Management Laboratory (ASCOM-LAB), KMITL, my responsibility is to continue working on the existing research projects in order to commercialize them to the space industry, specifically on SSA.

August 2022 – Current

Researcher | Laboratory for Information and Control System (LiCS), KOREA, SOUTH, KAIST

- I currently work as a researcher participating in several funded research projects. My research at LiCS is mainly about space situational awareness; in detail, the projects include the development of a computational intelligent orbit propagator, and space objects' size estimation. I am participating in the airport traffic management project, which is the intensive application of artificial neural network on time series.

Publications

2019 Insom, K.; Kamsing, P.; **Phisannupawong, T.**; Torteeka, P. Outlet Temperature Prediction of Boiling Heat Transfer in Helical Coils through Artifcial Neural Network. Proceedings 2019, 39, 16.

2020 **Phisannupawong, T.**; Kamsing, P.; Torteeka, P.; Yooyen, S. Vision-based attitude estimation for spacecraft docking operation through deep learning algorithm, IEEE, The 22nd International Conference on Advanced Communications Technology ,pp 281-284.

2020 Kamsing, P.; Torteeka, P.; Yooyen, S.; Yenpiem, S.; Delahaye, D.; Notry, P.; **Phisannupawong, T.**; Channumsin, S.; Aircraft trajectory recognition via statistical analysis clustering for Suvarnabhumi international airport, IEEE, The 22nd International Conference on Advanced Communications Technology, pp 290-297

2020 **Phisannupawong, T.**; Kamsing, P.; Torteeka, P.; Channumsin, S.; Sawangwit, U.; Hematulin, W.; Jarawan, T.; Somjit, T.; Yooyen, S.; Delahaye, D.; Boonsrimuang, P. Vision-Based Spacecraft Pose Estimation via a Deep Convolutional Neural Network for Noncooperative Docking Operations. Aerospace, MDPI, 7, 126.

2021 Hematulin, W.; Kamsing, P.; Torteeka, P.; Somjit, T.; **Phisannupawong, T.**; Jarawan, T. Cooperative Motion Planning For Multiple UAVs via the Bezier Curve Guided Line of Sight Techniques, IEEE, The 23rd International Conference on Advanced Communications Technology.

2021 Jarawan, T; Kamsing, P.; Torteeka, P.; Manuthasna, S.; Hematulin, W.; Chooraks, T.; **Phisannupawong, T.**; Sangkarak, S.; Mungkhud, S.; Somjit, T. Wi-Fi Received Signal Strength based Indoor Localization System by K-Nearest Neighbors fingerprint integrated D*algorithm, IEEE, The 23rd International Conference on Advanced Communications Technology.

2023 Hematulin, W.; Kamsing, P.; Torteeka, P.; Somjit, T.; **Phisannupawong, T.**; Jarawan, T. Trajectory Planning for Multiple UAVs and Hierarchical Collision Avoidance Based on Nonlinear Kalman Filters. Drones, MDPI, 7, 142.

2024 **Phisannupawong, T.**; Damanik, J; Choi H. Contrastive Learning-Based Air Traffic Trajectory Representation : A Case Study on Incheon International Airport (Submitted for EuroGNC 2024)

2024 Damanik, J; **Phisannupawong, T.**; Choi H. TCTC : Enhancing Time-Series Clustering through Temporal Contrastive Learning (Submitted for PeerJ Computer Science)

Technical Skills

Word Processing	Microsoft Office, LaTeX
Computer Languages	Python, MatLab, SQL
Techniques	Machine Learning, Computer vision, Time-series data mining, High-Performance Computing
Simulation	Unreal Engine 4, Autodesk Maya
OS Peferences	Windows, Linux(Ubuntu; Desktop, Server)

Interests

- Machnine Learning, Computer vision, Time-series representation learning, LLMs application for time-series and images.
- Aerospace data application, Space Situational Awareness, Intelligent Air-traffic Control system.

Honors and Awards

2018-2021 Certificate of excellence in academic score, KMITL

2018-2021 Scholarship for excellence in academic score, KMITL

2019 Certificate of participation, 2nd International Summer School Automotive Engineering, 2019, Nanjing Tech University, Pujiang Institute.

2020 Certificate of academic contribution to the faculty (research), academic year 2019, IAAI, KMITL

Outreach and Volunteering

2018 Facility visit, and aviation industry observations, Aviation and Electronics support, PTE, LTD, Singapore

2019 Exchange Student, Nanjing Tech University Pujiang Institute, Nanjing, China, 2nd Summer School Automotive Engineering, A collaborative program of KMITL, KMUTT, Chulalongkorn University, Tokyo Tech University, and Nanjing Tech University Pujiang Institute

2019-2020 Vice President (Academic), Student association of International Academy of Aviation Industry, KMITL

2022 Participation, Korean Society for Aeronautical & Space Sciences Conference, Fall 2022, Jeju, Korea, South.

2022 Participation, International Conference on Robot Intelligence Technology and Applications (RiTA 2022), Griffith University Gold Coast Campus, Australia.

2023 Participation, The Thirty-seventh Annual Conference on Neural Information Processing Systems (NeurIPS 2023), New Orleans, United States.