Teerapong Panboonyuen

kaopanboonyuen.github.io
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Samsen Nai, Phaya Thai
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CURRENT ROLES

- **MARS (Motor AI Recognition Solution)** — Bangkok, Thailand
  Senior Research Scientist (Artificial Intelligence Laboratory)
  https://kaopanboonyuen.github.io/MARS — 2022–present
- **Chulalongkorn University** — Bangkok, Thailand
  Postdoctoral Researcher in AI (Advancing Geoscience Laboratory)
  https://kaopanboonyuen.github.io/MeViT — 2021–present
- **College of Computing, Khon Kaen University** — Khon Kaen, Thailand
  Visiting Faculty (Visiting Lecturer in AI and Data Science)
  https://kaopanboonyuen.github.io/SC310005 — 2021–present

EDUCATION

- **Postdoctoral Research Fellow** — 2021–2026
  Chulalongkorn University, H-Index: 10
- **Ph.D. Computer Engineering** — 2018–2020
  Chulalongkorn University, GPA: 4.00
- **M.Eng. Computer Engineering** — 2016–2017
  Chulalongkorn University, GPA: 4.00
- **B.Eng. Computer Engineering** — 2012–2015
  KMUTNB (Top 1% in University Mathematics)
- **Pre-Electrical Engineering (PET21)** — 2010–2012
  KMUTNB (Senior High School: 10th - 12th Grade)

AWARDS

Scholarships and merit awards:

- H.M. the King Bhumibhol Adulyadej's 72nd Birthday Anniversary Scholarship (Master)
- The 100th Anniversary Chulalongkorn University Fund for Doctoral Scholarship (Ph.D.)

- The 90th Anniversary of Chulalongkorn University Scholarship (Ph.D.)
- Ratchadapisek Research Funds (RRF) for Postdoctoral Fellowship (Chula, 2021-2025)
- The Second Century Fund Office (C2F) for Postdoctoral Fellowship (Chula, 2025-2026)
- Top 1% Score in University Differential Calculus and Engineering Mathematics

Best paper awards:

- 2017 Best Student Paper Award in International Conference on Computing and Information Technology (IC2IT)
- 2019 Best Young Researcher Paper Award in First International Conference on Smart Technology & Urban Development (STUD)

Athletic achievements:

- 2022 Bangkok Marathon 42.195K Finisher (Bangkok Marathon)
- 2024 IRONMAN 70.3 Finisher (1.9K swim, 90K bike ride, and 21.1K run) (IM70.3)
- 2024 Laguna Phuket Triathlon Finisher (1.8K swim, 55K bike ride, and 12K run) (LPT)
- 2025 Chombueng Marathon 42.195K Finisher (Chombueng Marathon)

Other recognitions:

- 2024 Distinguished Reviewer for the Bronze Level of IEEE Transactions on Medical Imaging (IEEE Transactions)
- 2025 Global Young Scientists Summit (GYSS) Scholarship from Her Royal Highness Princess Maha Chakri Sirindhorn (GYSS)

PUBLICATIONS

Google Scholar: https://scholar.google.co.th/citations?user=myy0qDgAAAAJ&hl=en

1. **Panboonyuen, Teerapong**. SLICK: Selective Localization and Instance Calibration for Knowledge-Enhanced Car Damage Segmentation in Automotive Insurance. (2025) arXiv paper: https://arxiv.org/abs/2506.10528
2. **Panboonyuen, Teerapong**. ALBERT: Advanced Localization and Bidirectional Encoder Representations from Transformers for Automotive Damage Evaluation. (2025) arXiv paper: https://arxiv.org/abs/2506.10524
3. **Panboonyuen, Teerapong**. SEA-ViT: Sea Surface Currents Forecasting Using Vision Transformer and GRU-Based Spatio-Temporal Covariance Modeling. https://ieeexplore.ieee.org/document/11003320 (KST2025)

4. **Panboonyuen, Teerapong**. REG: Refined Generalized Focal Loss for Road Asset Detection on Thai Highways Using Vision-Based Detection and Segmentation Models. https://ieeexplore.ieee.org/document/11003314 (KST2025)

5. **Panboonyuen, Teerapong**, et al. SatDiff: A Stable Diffusion Framework for Inpainting Very High-Resolution Satellite Imagery. *IEEE Access* (2025). https://ieeexplore.ieee.org/document/10929005

6. **Panboonyuen, Teerapong**, et al. GuidedBox: A Segmentation-Guided Box Teacher-Student Approach for Weakly Supervised Road Segmentation. *European Journal of Remote Sensing* (2024). [Pending acceptance] https://kaopanboonyuen.github.io/GuidedBox

7. **Panboonyuen, Teerapong**, et al. MeViT: A Medium-Resolution Vision Transformer for Semantic Segmentation on Landsat Satellite Imagery for Agriculture in Thailand. *Remote Sensing* 15.21 (2023): 5124. https://www.mdpi.com/2072-4292/15/21/5124

8. **Panboonyuen, Teerapong**, et al. MARS: Mask Attention Refinement with Sequential Quadtree Nodes for Car Damage Instance Segmentation. *International Conference on Image Analysis and Processing*. Cham: Springer Nature Switzerland, 2023. https://link.springer.com/chapter/10.1007/978-3-031-51023-6_3

9. **Panboonyuen, Teerapong**, **(Ph.D. thesis)** Semantic Segmentation on Remotely Sensed Images Using Deep Convolutional Encoder-Decoder Neural Network. *Doctor of Philosophy, Chulalongkorn University Theses and Dissertations (Chula ETD). 8534. (2019). https://digital.car.chula.ac.th/chulaetd/8534/

10. **Panboonyuen, Teerapong**, **(Graduate thesis)** Semantic Road Segmentation on Remotely-Sensed Images Using Deep Convolutional Neural Networks and Landscape Metrics. *Master of Engineering, Chulalongkorn University Theses and Dissertations (Chula ETD). (2016). https://www.car.chula.ac.th/display7.php?bib=2156287

11. **Panboonyuen, Teerapong**, et al. Object Detection of Road Assets Using Transformer-Based YOLOX with Feature Pyramid Decoder on Thai Highway Panorama. *Information* 13.1 (2022): 5. https://www.mdpi.com/2078-2489/13/1/5

12. **Panboonyuen, Teerapong**, et al. Transformer-Based Decoder Designs for Semantic Segmentation on Remotely Sensed Images. *Remote Sensing* 13.24 (2021): 5100. https://www.mdpi.com/2072-4292/13/24/5100

13. **Panboonyuen, Teerapong**, et al. Semantic Labeling in Remote Sensing Corpora Using Feature Fusion-Based Enhanced Global Convolutional Network with High-Resolution Representations and Depthwise Atrous Convolution. *Remote Sensing* 12.8 (2020): 1233. https://www.mdpi.com/2072-4292/12/8/1233

14. **Panboonyuen, Teerapong**, et al. Semantic Segmentation on Remotely Sensed Images Using an Enhanced Global Convolutional Network with Channel Attention and Domain Specific Transfer Learning. *Remote Sensing* 11.1 (2019): 83. https://www.mdpi.com/2072-4292/11/1/83

15. **Panboonyuen, Teerapong**, et al. Road Segmentation of Remotely-Sensed Images Using Deep Convolutional Neural Networks with Landscape Metrics and Conditional Random Fields. *Remote Sensing* 9.7 (2017): 680. https://www.mdpi.com/2072-4292/9/7/680

16. **Panboonyuen, Teerapong**, et al. An Enhanced Deep Convolutional Encoder-Decoder Network for Road Segmentation on Aerial Imagery. *International Conference on Computing and Information Technology*. Springer, Cham, 2017. https://www.mdpi.com/2072-4292/9/7/680

17. **Panboonyuen, Teerapong**, et al. Image Vectorization of Road Satellite Data Sets. *Journal of Remote Sensing and GIS Association of Thailand* (2017). https://learn.gistda.or.th

18. Wichakam, I., **Panboonyuen, T.**, Udomcharoenchaikit, C., and Vateekul, P. Real-Time Polyps Segmentation for Colonoscopy Video Frames Using Compressed Fully Convolutional Network. *International Conference on Multimedia Modeling* (2018): 393-404. https://link.springer.com/chapter/10.1007/978-3-319-73603-7_32

19. Vajeethaveesin, T., **Panboonyuen, T.**, et al. A Performance Comparison between GIS-based and Neural Network Methods for Flood Susceptibility Assessment in Ayutthaya Province. *Trends in Sciences* 19.2 (2022): 2038. https://tis.wu.ac.th/index.php/tis/article/view/2038

20. Vateekul, P., **Panboonyuen, T.**, et al. Road Map Extraction from Satellite Imagery Using Connected Component Analysis and Landscape Metrics. *IEEE Big Data* (2017): 3435-3442. https://ieeexplore.ieee.org/document/8258330

21. Chantharaj, S., **Panboonyuen, T.**, et al. Semantic Segmentation on Medium-Resolution Satellite Images Using Deep Convolutional Networks with Remote Sensing Derived Indices. *JCSSE* (2018): 1-6. https://ieeexplore.ieee.org/document/8457378

22. Kantavat, P., **Panboonyuen, T.**, et al. Transportation Mobility Factor Extraction Using Image Recognition Techniques. *STUD 2019*. https://ieeexplore.ieee.org/document/9018796

23. Intarat, K., **Panboonyuen, T.**, et al. Enhanced Feature Pyramid Vision Transformer for Semantic Segmentation on Thailand Landsat-8 Corpus. *Information* (2022). https://www.mdpi.com/2078-2489/13/5/259

24. Thitisiriwech, K., **Panboonyuen, T.**, et al. The Bangkok Urbanscapes Dataset for Semantic Urban Scene Understanding Using Enhanced Encoder-Decoder Networks. *IEEE Access* (2022). https://ieeexplore.ieee.org/document/9779212

25. Thitisiriwech, K., **Panboonyuen, T.**, et al. Quality of Life Prediction in Driving Scenes on Thailand Roads Using Deep Convolutional Neural Networks. *Sustainability* 15.3 (2023): 2847. https://www.mdpi.com/2071-1050/15/3/2847

26. Intarat, K., **Panboonyuen, T.**, et al. Deep Residual Neural Networks with Self-Attention for Landslide Susceptibility Mapping in Uttaradit Province, Thailand. *GIS-IDEAS: Advancing Geospatial Innovation*. (2024). https://gis-ideas.org/2024

27. Nithisopa, N., **Panboonyuen, T.** (2025, February). DOTA: Deformable Optimized Transformer Architecture for End-to-End Text Recognition with Retrieval-Augmented Generation. In *2025 17th International Conference on Knowledge and Smart Technology (KST)* (pp. 301–306). IEEE.

28. Dechsupa, C., **Panboonyuen, T.**, Vatanawood. (2025). Towards AI-Augmented Formal Verification: A Preliminary Investigation of ENGRU and Its Challenges. IEEE Access.

TECHNICAL SKILLS

- **Programming Languages:** Python, Java, Golang, R, MATLAB, C
- **Machine Learning & Deep Learning:** PyTorch, TensorFlow, Keras, Theano, Scikit-Learn
- **Large Language Models (LLMs) & Generative AI:** GPT, BERT, T5, QWEN, ChatGPT, Gemini, Claude, Retrieval-Augmented Generation (RAG)
- **AI Toolkits & Libraries:** Transformers, Hugging Face, Langchain, OpenAI API, SHAP, LIME, Fairness Indicators
- **Data Science & Visualization:** Pandas, Plotly, Power BI, Tableau, Looker Studio
- **Model Experimentation & Monitoring:** Weights and Biases (WandB), TensorBoard, Gradio, Streamlit
- **Web Scraping & Automation:** Beautiful Soup, Selenium
- **Web Development:** HTML, CSS, JavaScript, RESTful APIs, Flask, Basic Full-Stack Development
- **Cloud, DevOps & Infrastructure:** Docker, Docker-Compose, Kubernetes, Git, Google Cloud Platform (GCP), Amazon Web Services (AWS)
- **Databases & Geospatial:** PostgreSQL, MySQL, SQLite, SQL, GDAL
- **Other Tools:** Swagger UI, RapidMiner Studio, Jupyter Notebook, Google Colab

GitHub: https://github.com/kaopanboonyuen

OPEN SOURCE PROJECTS

- **AI-Driven Image Recognition for Transportation Mobility and QOL in Bangkok:** https://kaopanboonyuen.github.io/quality-of-life-ai-transportation
  Urban development hinges on improving the Quality of Life (QOL) for city inhabitants. Traditionally, QOL assessments rely heavily on questionnaire surveys, which, while informative, can be costly and time-consuming.
- **Medium-Resolution Vision Transformer for Semantic Segmentation on Landsat Satellite Imagery in Thailand:** https://kaopanboonyuen.github.io/MeViT
  This project introduces MeViT (Medium-Resolution Vision Transformer), a novel approach tailored for Landsat satellite imagery of key economic crops in Thailand, including para rubber, corn, and pineapple.
- **Flood Risk Assessment in Ayutthaya Province:** https://kaopanboonyuen.github.io/rainfall-prediction-a-machine-learning-approach
  This project builds a predictive model by leveraging key features from the dataset and applying a range of algorithms, including Random Forest, Gradient Boosting, Support Vector Machines, and Neural Networks. Model interpretability is enhanced using LIME and SHAP to provide clear, data-driven insights.

- **The Bangkok Urbanscapes Dataset for Semantic Urban Scene Understanding Using Deep Learning:** https://kaopanboonyuen.github.io/bkkurbanscapes
  To further study self-driving cars in Thailand, we provide both the proposed methods and the proposed dataset in this project. We hope that our architecture and our dataset would help self-driving autonomous developers improve systems for driving in many cities with unique traffic and driving conditions similar to Bangkok and elsewhere in Thailand.

PAST RESEARCH AND WORK EXPERIENCE

- **MARS, Senior Research Scientist** — Bangkok
  (Motor AI Recognition Solution) — 2022–Present
  Manager: Naruepon Pornwiriyakul
  - Pioneered the development of the MARS AI Model, presented at ICIAP 2023, Italy.
  - Initiated projects on Explainable AI, Instance Segmentation, and Semantic Distillation.
  - Integrated Agentic AI as APIs for auto insurance and garage service enhancements.
- **Khon Kaen University, Visiting Faculty** — Khon Kaen
  Special Lecturer in AI and Data Science — 2021–Present
  Coordinator: Chanon Dechsupa
  - Delivered courses such as Artificial Intelligence and Smart Process Management.
  - Authored refined syllabi and received recognition via ministerial orders:
  - Order 5907-2566.
  - Orders 660301.26-24844, and 660101.26-13320.
- **CJ Express Group, AI Research Scientist (Department Manager)** — Bangkok
  Data Innovation Laboratory — 2020–2021
  Managers: Narong Intiruk (CJ), Jarun Ngamvirojcharoen (TILDI)
  - Spearheaded the development of demand forecasting systems using PySpark and Cognitive Computing, significantly enhancing retail operational efficiency.
  - Optimized time-series forecasting for retail using advanced stats, machine learning (e.g., Gradient Boosting), and cutting-edge techniques like deep learning and ensemble methods.
  - Engineered scalable solutions on Google Cloud to streamline data pipelines and ensure reliable model deployment in production environments.
  - Integrated MLOps practices to automate machine learning workflows, improving model lifecycle management and deployment efficiency.
- **Chulalongkorn University, Graduate Teaching Assistant** — Bangkok
  Machine Intelligence and Knowledge Discovery Lab — 2016–2020
  Mentor: Peerapon Vateekul
  - Co-taught courses like **Big Data Tools**, **Python**, **Data Science and Engineering**, among others. `https://github.com/kaopanboonyuen/2110446_DataScience_2021s2`
  - Delivered online courses on Data Analytics and Big Data through Chula MOOC.

- Conducted research on Transformer-based decoder designs, leveraging Swin Transformer to achieve state-of-the-art. https://github.com/kaopanboonyuen/FusionNetGeoLabel

- **GISTDA, Freelance AI Specialist** Bangkok
  (Geo-Informatics and Space Technology Development Agency) 2016–2020
  Manager: Siam Lawawirojwong
  - Developed LULC mapping systems using Vision Transformers and Graph Neural Networks.
  - Built systems for forest fire classification in LANDSAT-8 satellite imagery.

- **DEPA, AI Researcher (PT)** Bangkok
  (Digital Economy Promotion Agency) 2019–2020
  Coordinator: Preesan Rakwatin
  - Developed an unsupervised system to classify sugarcane plantations in Thailand using satellite imagery.
  - Designed and trained models for delineating sugarcane field boundaries in Thailand, employing DETR architectures with collaborative hybrid assignment training methodologies.

- **Centaco Farm Company Limited, Data Scientist (PT)** Bangkok
  Applied AI for Livestock 2019–2020
  Manager: Ms. Kung, Doctor of Veterinary Medicine
  - Designed a hatchability prediction model for broiler chickens using ensemble learning methods such as Gradient Boosting Machines (GBM) and Random Forests.
  - Captured nonlinear quadratic effects between breeder age and hatchability via Polynomial Kernel Support Vector Regression (SVR) and feature transformation.
  - Implemented Bayesian Optimization for hyperparameter tuning, improving model accuracy and robustness.
  - Developed an interpretable AI framework using SHAP (SHapley Additive exPlanations) to explain model predictions for veterinary decision support.

- **Bangkok Innovation House, Lead Data Science Mentor (PT)** Bangkok
  Data Science Pathway Team, Chula MOOC 2018–2020
  Manager: Pahnit Seriburi
  - Served as **Head TA** for the data science pathway team at Chula MOOC.
  - Spearheaded volunteer teaching in Practical Data Analytics using RapidMiner and Python.
  - Delivered hands-on learning experiences, helping students gain practical skills in data science. https://github.com/kaopanboonyuen/Python-Data-Science

- **Chulalongkorn University, Postdoctoral Researcher** Bangkok
  Advancing Geoscience Laboratory 2021–Present
  Co-authors: Chalermchon Satirapod (Head), Chaiyut Charoenphon
  - Researched sequence-to-sequence models for land use and land cover (LULC) classification on remote sensing corpora.
  - Applied generative AI techniques, including Stable Diffusion, to enhance satellite image resolution and synthesize realistic geospatial data.

- Developed generative adversarial networks (GANs) for data augmentation, improving model robustness on limited labeled satellite datasets.

- **NetDesign School, Python Programming Trainer (PT)** Bangkok
  Training Program 2019–2019
  - Conducted Python programming training sessions at NetDesign School, located on the 4th floor of Siam Paragon, Bangkok.
  - Delivered beginner to intermediate-level Python courses, focusing on practical applications and problem-solving.
  - Empowered students with foundational coding skills to pursue further studies or career opportunities in programming.

- **Main Shipping Service, Computer Technical Support (PT)** Bangkok
  Network Infrastructure Team 2017–2020
  Managers: Mr. Deaw, Ms. Nueng
  - Designed and deployed functional networks, including WAN, LAN, and WLAN systems.
  - Configured and installed software, servers, routers, and various network devices to ensure seamless operation.
  - Maintained detailed technical documentation and recommended improvements for network performance, capacity, and scalability.

SERVICE TO PROFESSION

More reviews can be found under my WoS ID: **AAO-4985-2020**

Invited Reviewers:

- Pattern Recognition (Publisher: Elsevier)
- Neurocomputing (Publisher: Elsevier)
- Computer Vision and Image Understanding (Publisher: Elsevier)
- Computers and Geosciences (Publisher: Elsevier)
- CAAI Transactions on Intelligence Technology (Publisher: Elsevier)
- Tsinghua Science and Technology (Publisher: Elsevier)
- Scientific Reports (Publisher: Nature) – **Certificate**
- Discover Applied Sciences (Publisher: Nature)
- The Journal of Supercomputing (Publisher: Springer Nature)
- Artificial Intelligence Review (Publisher: Springer Nature)
- Applied Geomatics (Publisher: Springer) – **Certificate**

- Earth Science Informatics(Publisher: Springer Nature) – **Certificate**
- The Visual Computer (Publisher: Springer Nature) – **Certificate**
- Neural Processing Letters (Publisher: Springer Nature) – **Certificate**
- Signal, Image and Video Processing (Publisher: Springer Nature) – **Certificate**
- Plant Methods (Publisher: BioMed Central) – **Certificate**
- ACM Transactions on Privacy and Security (Publisher: ACM)
- ACM Transactions on Knowledge Discovery from Data (Publisher: ACM)
- ACM Transactions on Intelligent Systems and Technology (Publisher: ACM)
- ACM Transactions on Autonomous and Adaptive Systems (Publisher: ACM)
- ACM Transactions on Transactions on Spatial Algorithms and Systems (Publisher: ACM)
- ACM Transactions on Multimedia Computing Communications and Applications (TOMM)
- Journal of Vibration and Control (Publisher: Springer)
- Biomedical Engineering/Biomedizinische Technik (Publisher: Springer)
- Food Bioengineering (Publisher: Springer)
- AI in Precision Oncology (Publisher: Springer)
- Acta Oceanologica Sinica (Publisher: Springer)
- Robotica (Publisher: Springer)
- Journal of Harbin Institute of Technology (New Series) (Publisher: Springer)
- Nuclear Science and Techniques (Publisher: Springer)
- Big Earth Data (Publisher: Taylor and Francis)
- European Journal of Remote Sensing (Publisher: Taylor and Francis)
- Geo-spatial Information Science (Publisher: Taylor and Francis)
- Computer Methods in Biomechanics and Biomedical Engineering
- Journal of Intelligent Transportation Systems: Technology, Planning, and Operations
- Journal of Spatial Science (Publisher: Taylor and Francis)
- Smart Science (Publisher: Taylor and Francis)
- Geocarto International (Publisher: Taylor and Francis)
- Smart Science (Publisher: Taylor and Francis)
- International Journal of Remote Sensing (Publisher: Taylor and Francis)

- International Journal of Image and Data Fusion (Publisher: Taylor and Francis)
- International Journal of Digital Earth (Publisher: Taylor and Francis)
- International Journal of Building Pathology and Adaptation (Publisher: Taylor and Francis)
- International Journal of Imaging Systems and Technology (Publisher: Wiley) – **Certificate**
- International Journal of Circuit Theory and Applications (Publisher: Wiley)
- Journal of Phytopathology (Publisher: Wiley)
- Transactions in GIS (Publisher: Wiley) – **Certificate**
- Applied AI Letters (Publisher: Wiley) – **Certificate**
- Engineering Reports (Publisher: Wiley) – **Certificate**
- Expert Systems (Publisher: Wiley) – **Certificate**
- IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)
- IEEE Transactions on Geoscience and Remote Sensing (Publisher: IEEE)
- IEEE Transactions on Artificial Intelligence (Publisher: IEEE)
- IEEE Transactions on Big Data (Publisher: IEEE)
- IEEE Transactions on Medical Imaging (Publisher: IEEE) – **Certificate**
- IEEE Transactions on Image Processing (Publisher: IEEE)
- IEEE Transactions on Aerospace and Electronic Systems (Publisher: IEEE)
- IEEE Transactions on AgriFood Electronics (Publisher: IEEE)
- IEEE Transactions on Human-Machine Systems (Publisher: IEEE)
- IEEE Transactions on Circuits and Systems for Video Technology (Publisher: IEEE)
- IEEE Transactions on Radiation and Plasma Medical Sciences (Publisher: IEEE)
- IEEE Transactions on Emerging Topics in Computational Intelligence (Publisher: IEEE)
- IEEE Transactions on Computational Social Systems (Publisher: IEEE)
- IEEE Transactions on Vehicular Technology (Publisher: IEEE)
- IEEE Transactions on Systems, Man, and Cybernetics Systems (Publisher: IEEE)
- IEEE Access (Publisher: IEEE)
- IEEE MultiMedia (Publisher: IEEE)
- IEEE Consumer Electronics Magazine (Publisher: IEEE)
- IEEE Intelligent Systems (Publisher: IEEE)

- IEEE Journal of Biomedical and Health Informatics (Publisher: IEEE)
- PLOS ONE (Publisher: PLOS)
- IET Computer Vision (Publisher: IET) – **Certificate**
- IET Intelligent Transport Systems (Publisher: IET) – **Certificate**
- IET Smart Science (Publisher: IET)
- Electronics Letters (Publisher: IET)
- Remote Sensing (Publisher: MDPI)
- Forests (Publisher: MDPI)
- Agriculture (Publisher: MDPI)
- Agronomy (Publisher: MDPI)
- Mathematics (Publisher: MDPI)
- Sensors (Publisher: MDPI)
- Energies (Publisher: MDPI)
- Symmetry (Publisher: MDPI)
- ISPRS International Journal of Geo-Information (Publisher: MDPI)
- Big Data and Cognitive Computing (BDCC) (Publisher: MDPI)
- Mathematical and Computational Applications (MCA) (Publisher: MDPI)
- Processes (Publisher: MDPI)
- International Journal of Geo-Information (IJGI) (Publisher: MDPI)
- Journal of Vibration and Control (Publisher: SAGE)
- Research Methods in Medicine and Health Sciences (Publisher: SAGE)
- International Journal of High Performance Computing Applications (Publisher: SAGE)
- Ultrasonic Imaging (Publisher: SAGE)
- Composites and Advanced Materials (Publisher: SAGE)
- Science Progress (Publisher: SAGE)
- Part D: Journal of Automobile Engineering (Publisher: SAGE)
- Human-centric Computing and Information Sciences (Publisher: SpringerOpen)
- Journal of Computational Methods in Science and Engineering (Publisher: IOS Press)
- Journal of Chemical Engineering of Japan (Publisher: Society of Chemical Engineers, Japan)
- Journal of Communications and Networks (Publisher: Korean Institute of Communications and Information Sciences)

PRESS

- **The Leader Asia**: Dr. Teerapong and his team introduced their advanced AI for car damage detection at ICIAP 2023 in Udine, setting new accuracy standards with their innovative MARS model. Retrieved from: https://theleaderasia.com
- **Techsauce**: Highlighted their AI technology for automatic car damage assessment, earning recognition for excellence at ICIAP 2023 in Italy. Retrieved from: https://techsauce.co
- **LINE TODAY**: Showcased the MARS model at ICIAP 2023, noted for its high accuracy and setting new global standards in car damage detection. Retrieved from: https://today.line.me
- **Moneychat**: Reported the award-winning innovation in AI for car damage estimation presented at ICIAP 2023. Retrieved from: https://moneychat.co.th
- **Kaohoon**: Celebrated the award-winning success of MARS at ICIAP 2023. Retrieved from: https://www.kaohoon.com
- **Mitistock**: Introduced the MARS model, featuring advanced self-attention mechanisms for vehicle damage assessment in Thailand. Retrieved from: https://www.mitihoon.com
- **The Story Thailand**: Presented cutting-edge AI techniques in car wound detection, achieving high accuracy and setting international benchmarks.
  Retrieved from: https://www.thestorythailand.com
- **Media of Thailand**: Unveiled the MARS model at ICIAP 2023, recognized globally for its precision in car damage detection. Retrieved from: https://www.mediaofthailand.com
- **Thailand Insurance News**: Featured Dr. Teerapong's MARS model at ICIAP 2023 for its groundbreaking accuracy in car damage detection.
  Retrieved from: https://thailandinsurancenews.com
- **Chulalongkorn University**: Published a study on semantic road segmentation using deep convolutional neural networks. Retrieved from: https://www.car.chula.ac.th
- **Chula Engineering News**: Featured Dr. Teerapong's participation in the Global Young Scientists Summit (GYSS) 2025, highlighting academic leadership and global collaboration. Retrieved from: eng.chula.ac.th
- **Thaivivat Insurance**: Announced Dr. Teerapong's research recognition at UAMC 2025, emphasizing advancements in AI for urban analytics and mobility challenges. Retrieved from: thaivivat.co.th

COMMUNITY SERVICE

- **Young Scientists Quickfire Pitch** GYSS2025
  National University of Singapore, Singapore
  I presented MeViT, a Vision Transformer designed for high-precision segmentation of Landsat satellite images, at the Young Scientists Quickfire Pitch. This project aims to enhance geospatial data analysis using cutting-edge AI techniques. More Details

- **Undergraduate Applied Mathematics Conference 2025** UAMC2025
  KMITL, Bangkok, Thailand
  I presented my research at the Undergraduate Applied Mathematics Conference 2025, focusing on advanced topics in applied mathematics and their real-world applications. More Details

- **Exploring Careers as an AI Research Scientist** 2024
  NSTDA, Pathum Thani, Thailand
  I discussed AI careers with high school students, highlighting opportunities in academia, industry, and generative AI research. More Details

- **Inspiring the Future of AI Innovations and Mastering LLM** 2024
  KMUTNB, Bangkok, Thailand
  I delivered a keynote to undergraduate students, focusing on the transformative impact of AI and advancements in Large Language Models (LLMs), such as ChatGPT. More Details

- **Geospatial Big Data Analytics** 2023
  GISTDA, Pathum Thani, Thailand
  I conducted a session on leveraging PySpark and distributed machine learning to analyze large-scale geospatial datasets, emphasizing the importance of interactive visualization tools for decision-making. More Details

- **Invited to Italy for ICIAP 2023 Presenting MARS Research** 2023
  University of Udine, Italy
  I presented my research on MARS, a model enhancing instance segmentation for car damage evaluation, at the ICIAP 2023 Workshop. More Details

- **Distributed Machine Learning Techniques for Geospatial Data** 2023
  GISTDA, Pathum Thani, Thailand
  I led a course on distributed machine learning, focusing on PySpark and TensorFlow for geospatial data applications, teaching efficient multi-GPU training strategies. More Details

- **Achieve Data Science First Meet** 2023
  Victor Club, Samyan Mitrtown, Bangkok, Thailand
  I spoke at a student event on leveraging data science and AI to help organizations stay competitive in today's data-driven world. More Details

TEACHING

- **Visiting Faculty - College of Computing, Khon Kaen University** 2022 - Present
  Khon Kaen, Thailand
  I teach courses in Artificial Intelligence, Machine Learning, and Business Intelligence, including:
  - SC310005 Artificial Intelligence and Machine Learning Application
  - CP020002 Smart Process Management
  - SC320002 Business Intelligence
  - CP020001 Introduction to Computers and Programming

- **Guest Lecturer and AI Committee Member - NSTDA One Day Camp** 2024
  Sirindhorn Science Home, Thailand
  Delivered a talk on AI research careers as part of the GYSS2025 scholarship program. Full Blog and Slide

- **Modern Integrated Survey Technology - Chulalongkorn University** 2023
  Bangkok, Thailand
  Guided students in applying machine learning techniques to survey engineering problems. Invitation Letter

- **AI Inspiration Course - Khon Kaen University** 2024
  Khon Kaen, Thailand
  Delivered a lecture on Generative AI: Current Trends and Practical Applications. Lecture Slide

- **The 7th KVIS Invitational Science Fair** 2024
  Kamnoetvidya Science Academy, Rayong, Thailand
  Served as a committee member for the AI project evaluation. Invitation Letter

- **Industrial Advisory Board (IAB) - ECE KMUTNB** 2024
  Bangkok, Thailand
  Contributed to curriculum assessment and provided feedback on course development. Invitation Letter

- **AI and ML Instructor - Nomklao Kunnathi Demonstration School** 2021
  Bangkok, Thailand
  Taught AI and ML in the Design Graphics Science curriculum for Grade 10 students. Invitation Letter

- **Deep Learning Instructor - Thammasat University** 2023
  Bangkok, Thailand
  Conducted a course on satellite data processing for advanced military and disaster missions. Invitation Letter

- **Senior Project Advisor - Thammasat University** 2022
  Bangkok, Thailand
  Advised senior geography students on AI-related projects. Invitation Letter

- **AI Instructor - Department of Lands, Thailand** 2024
  Bangkok, Thailand
  Delivered AI training on land title deed data analysis. Course Link

Innovative AI Tools and Solutions Developed

- **Next-Generation AI Toolkits** — Engineered advanced AI platforms leveraging state-of-the-art transformer architectures and large language models (LLMs) to automate complex data processing and decision-making workflows, significantly reducing manual effort and accelerating time-to-insight.

- **Efficient Model Distillation Pipelines** — Developed robust teacher-student frameworks for compressing large-scale models into lightweight, deployable versions without sacrificing accuracy, enabling scalable AI deployment across edge devices and resource-constrained environments.

- **Generative AI Applications** — Pioneered the integration of Stable Diffusion and GAN-based generative models to synthesize high-fidelity data augmentations and enhance satellite

imagery resolution, boosting model robustness and predictive performance in geospatial analytics.

- **Agentic AI Systems** — Built intelligent multi-agent frameworks capable of autonomous reasoning and adaptive problem solving, demonstrating practical applications in automated research assistance and complex system optimization.
- **Custom AI Research Tools** — Created bespoke software leveraging transformer-based natural language understanding and explainability techniques (e.g., SHAP, attention visualization), empowering research teams to interpret and trust AI outputs in critical decision contexts.

Get to Know Me Better

- **Tech Enthusiast and Endurance Athlete**
  I'm passionate about leveraging technology to create meaningful impact. Outside of coding and AI research, I challenge myself with marathons and triathlons, pushing both physical and mental boundaries—embracing endurance as a metaphor for continuous growth.
- **AI and Machine Learning Advocate**
  With deep expertise in state-of-the-art AI, I develop solutions powered by transformer architectures, large language models (LLMs), and agentic AI systems. I specialize in applying model distillation and teacher-student frameworks to optimize performance while maintaining scalability.
- **Generative AI Explorer**
  Fascinated by generative models like Stable Diffusion and GANs, I experiment with synthesizing data and enhancing inputs for complex problems, pushing the boundaries of what AI-generated content can achieve in real-world applications.
- **Adaptable and Solution-Oriented**
  Whether architecting custom transformer-based models or guiding cross-functional teams, I thrive in dynamic environments by delivering creative, efficient, and data-driven AI solutions.
- **Community-Oriented**
  Volunteering and knowledge sharing keep me grounded. I enjoy engaging with tech communities to exchange ideas and contribute to collective growth and innovation.
- **Tech Trends Enthusiast**
  I stay at the forefront of emerging technologies—from quantum computing to the latest in large language model (LLM) architectures—and enjoy exploring how these trends can reshape industries and society.
- **Let's Connect!**
  If you're interested in discussing tech, research, or want to share stories about the latest gadgets, feel free to reach out to me at panboonyuen.kao@gmail.com.
- **About Me**[1]
  I'm Teerapong Panboonyuen, but you can call me Kao Panboonyuen or just Kao.

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