

# Teerapong Panboonyuen

[kaopanboonyuen.github.io](https://kaopanboonyuen.github.io)

71 (MARS), Din Daeng Rd

Samsen Nai, Phaya Thai

Bangkok 10400

[teerapong.panboonyuen@gmail.com](mailto:teerapong.panboonyuen@gmail.com)

[teerapong.pa@chula.ac.th](mailto:teerapong.pa@chula.ac.th)

## CURRENT ROLES

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| <ul style="list-style-type: none"><li>• <b>MARS (Motor AI Recognition Solution)</b><br/>Senior Research Scientist (Artificial Intelligence Laboratory)<br/><a href="https://kaopanboonyuen.github.io/MARS">https://kaopanboonyuen.github.io/MARS</a></li></ul>            | Bangkok, Thailand<br><br>2022–present   |
| <ul style="list-style-type: none"><li>• <b>Chulalongkorn University</b><br/>Postdoctoral Researcher in AI (Advancing Geoscience Laboratory)<br/><a href="https://kaopanboonyuen.github.io/MeViT">https://kaopanboonyuen.github.io/MeViT</a></li></ul>                     | Bangkok, Thailand<br><br>2021–present   |
| <ul style="list-style-type: none"><li>• <b>College of Computing, Khon Kaen University</b><br/>Visiting Faculty (Visiting Lecturer in AI and Data Science)<br/><a href="https://kaopanboonyuen.github.io/SC310005">https://kaopanboonyuen.github.io/SC310005</a></li></ul> | Khon Kaen, Thailand<br><br>2021–present |

## EDUCATION

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| <ul style="list-style-type: none"><li>• <b>Postdoctoral Research Fellow</b><br/>Chulalongkorn University, H-Index: 10</li></ul>                | 2021–2026 |
| <ul style="list-style-type: none"><li>• <b>Ph.D. Computer Engineering</b><br/>Chulalongkorn University, GPA: 4.00</li></ul>                    | 2018–2020 |
| <ul style="list-style-type: none"><li>• <b>M.Eng. Computer Engineering</b><br/>Chulalongkorn University, GPA: 4.00</li></ul>                   | 2016–2017 |
| <ul style="list-style-type: none"><li>• <b>B.Eng. Computer Engineering</b><br/>KMUTNB (Top 1% in University Mathematics)</li></ul>             | 2012–2015 |
| <ul style="list-style-type: none"><li>• <b>Pre-Electrical Engineering (PET21)</b><br/>KMUTNB (Senior High School: 10th - 12th Grade)</li></ul> | 2010–2012 |

## AWARDS

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### 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 Main Oral Presentation, 1 of 8 Selected](#) at the 14th Critical Care Conference, King Chulalongkorn Memorial Hospital, Bangkok, Thailand.
- [2025 Global Young Scientists Summit \(GYSS\) Scholarship](#) from Her Royal Highness Princess Maha Chakri Sirindhorn ([GYSS](#))

## PUBLICATIONS

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

1. **Panboonyuen, Teerapong**, et al. GuidedBox: A Segmentation-Guided Box Teacher-Student Approach for Weakly Supervised Road Segmentation. European Journal of Remote Sensing, Volume 58, Issue 1 (2025). DOI:10.1080/22797254.2025.2540963. <https://kaopanboonyuen.github.io/GuidedBox>
2. **Panboonyuen, Teerapong**. CU-ICU: Customizing Unsupervised Instruction-Finetuned Language Models for ICU Datasets via Text-to-Text Transfer Transformer. (2025) arXiv paper: <https://arxiv.org/abs/2507.13655>

3. **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>
4. **Panboonyuen, Teerapong.** ALBERT: Advanced Localization and Bidirectional Encoder Representations from Transformers for Automotive Damage Evaluation. (2025) arXiv paper: <https://arxiv.org/abs/2506.10524>
5. **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)
6. **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)
7. **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>
8. **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>
9. **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](https://link.springer.com/chapter/10.1007/978-3-031-51023-6_3)
10. **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/>
11. **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>
12. **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>
13. **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>
14. **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>

15. **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>
16. **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>
17. **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>
18. **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>
19. 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](https://link.springer.com/chapter/10.1007/978-3-319-73603-7_32)
20. 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>
21. 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>
22. 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>
23. Kantavat, P., **Panboonyuen, T.**, et al. Transportation Mobility Factor Extraction Using Image Recognition Techniques. *STUD* 2019. <https://ieeexplore.ieee.org/document/9018796>
24. 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>
25. 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>
26. 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>
27. 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>

28. 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.
29. Dechsupa, C., **Panboonyuen, T.**, Vatanawood. (2025). Towards AI-Augmented Formal Verification: A Preliminary Investigation of ENGRU and Its Challenges. IEEE Access.
30. Charoenphon, C., **Panboonyuen, T.**, Zhang, B., Satirapod, C. (2025). Investigating the use of deep learning-derived weighted mean temperature for GPS-PWVs estimation. *Journal of Spatial Science*, 1-22.

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## 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:** BeautifulSoup, 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>

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## OPEN SOURCE PROJECTS

- **AI-Driven Image Recognition for Transportation Mobility and QOL in Bangkok:** <https://github.com/kaopanboonyuen/QOL-TransportAI>  
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:** <https://github.com/kaopanboonyuen/RainNet-ML>  
This project develops a predictive model by utilizing key features from the dataset and employing a range of algorithms, including Random Forest, Gradient Boosting, Support Vector Machines, and Neural Networks. Model interpretability is enhanced through the use of LIME and SHAP, providing 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

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- **MARS, Senior Research Scientist** Bangkok  
(Motor AI Recognition Solution) 2022–Present  
Managers: Naruepon Pornwiriyaikul (IT), Innapha Tantanavivat (TVI)
  - Pioneered and led the development of [MARS: Mask Attention Refinement with Sequential Quadtree Nodes](#), a transformer-based model for high-precision car damage instance segmentation, published and presented at [ICIAP 2023, Italy](#).
  - Initiated and led research in Explainable AI, Computer Vision, and Semantic Distillation for real-time, in-field automotive damage assessment.
  - Published [ALBERT: Advanced Localization and Bidirectional Encoder Representations from Transformers for Automotive Damage Evaluation](#), a high-capacity transformer model for detailed vehicle damage localization.
  - Designed and distilled [SLICK: Selective Localization and Instance Calibration](#), a lightweight student model of ALBERT, achieving 700% inference speed-up for real-time deployment on edge and mobile devices in insurance workflows.
  - Engineered a custom distillation framework combining instance-level calibration, semantic pruning, and spatial refinement, enabling scalable AI use in low-power environments.
- **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, Postdoctoral Researcher (C2F)** Bangkok  
 Advancing Geoscience Laboratory 2021–Present  
 Co-authors: Chalermchon Satirapod (Head), Chaiyut Charoenphon
  - Independently researched and developed sequence-to-sequence models for land use and land cover (LULC) classification using remote sensing datasets, significantly improving classification accuracy.
  - Published [MeViT: A Medium-Resolution Vision Transformer for Semantic Segmentation on Landsat Satellite Imagery for Agriculture in Thailand](#), demonstrating a novel deep learning approach for satellite image analysis in agriculture.
  - Published [SatDiff: A Stable Diffusion Framework for Inpainting Very High-Resolution Satellite Imagery](#), a pioneering method integrating generative AI (Stable Diffusion) to enhance the resolution and synthesize realistic satellite imagery.
  - Successfully developed and implemented generative adversarial networks (GANs) for data augmentation, boosting model robustness on limited labeled satellite data.
  - Accepted for publication in *European Journal of Remote Sensing* with the work titled [GuidedBox: A Segmentation-Guided Box Teacher-Student Approach for Weakly Supervised Road Segmentation](#), advancing weakly supervised learning methods for geospatial analysis.
  - Solely responsible for the conceptualization, development, and deployment of all research models, from idea generation to debugging and final implementation.
- **Khon Kaen University, Visiting Faculty** Khon Kaen  
 Special Lecturer in AI and Data Science 2021–Present  
 Recruiter: Chanon Dechsupa
  - Delivered courses such as [Artificial Intelligence](#) and [Smart Process Management](#).
  - Authored refined syllabi and received recognition via ministerial orders:
    - [Order 660101.26/9304](#).
    - [Order 660101.26/24844](#).
    - [Order 660101.26/13320](#).
- **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](https://github.com/kaopanboonyuen/2110446_DataScience_2021s2)
  - Delivered online courses on [Data Analytics and Big Data](#) through Chula MOOC.
  - Researched 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  
 Recruiter: 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>
- 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.



## SERVICE TO PROFESSION

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More reviews can be found under my WoS ID: [AAO-4985-2020](#)

### Invited Reviewers:

- [ACM Transactions on Asian and Low-Resource Language Information Processing](#) (ACM)
- [ACM Transactions on Autonomous and Adaptive Systems](#) (Publisher: ACM)
- [ACM Transactions on Multimedia Computing Communications and Applications](#) (ACM)
- [ACM Transactions on Intelligent Systems and Technology](#) (Publisher: ACM)
- [ACM Transactions on Knowledge Discovery from Data](#) (Publisher: ACM)
- [ACM Transactions on Privacy and Security](#) (Publisher: ACM)
- [ACM Transactions on Spatial Algorithms and Systems](#) (Publisher: ACM)
- [IEEE Transactions on Pattern Analysis and Machine Intelligence](#) (PAMI)
- [IEEE Transactions on Aerospace and Electronic Systems](#) (Publisher: IEEE)
- [IEEE Transactions on AgriFood Electronics](#) (Publisher: IEEE)
- [IEEE Transactions on Artificial Intelligence](#) (Publisher: IEEE)
- [IEEE Transactions on Automation Science and Engineering](#) (Publisher: IEEE)
- [IEEE Transactions on Big Data](#) (Publisher: IEEE)
- [IEEE Transactions on Circuits and Systems for Video Technology](#) (Publisher: IEEE)
- [IEEE Transactions on Cognitive Communications and Networking](#) (Publisher: IEEE)
- [IEEE Transactions on Computational Social Systems](#) (Publisher: IEEE)
- [IEEE Transactions on Consumer Electronics](#) (Publisher: IEEE)
- [IEEE Transactions on Emerging Topics in Computational Intelligence](#) (Publisher: IEEE)
- [IEEE Transactions on Geoscience and Remote Sensing](#) (Publisher: IEEE)
- [IEEE Transactions on Image Processing](#) (Publisher: IEEE)
- [IEEE Transactions on Industrial Informatics](#) (Publisher: IEEE)
- [IEEE Transactions on Human-Machine Systems](#) (Publisher: IEEE)
- [IEEE Transactions on Medical Imaging](#) (Publisher: IEEE) – **Certificate**
- [IEEE Transactions on Neural Networks and Learning Systems](#) (Publisher: IEEE)
- [IEEE Transactions on Radiation and Plasma Medical Sciences](#) (Publisher: IEEE)

- [IEEE Transactions on Systems, Man, and Cybernetics Systems](#) (Publisher: IEEE)
- [IEEE Transactions on Vehicular Technology](#) (Publisher: IEEE)
- [IEEE Access](#) (Publisher: IEEE)
- [IEEE Consumer Electronics Magazine](#) (Publisher: IEEE)
- [IEEE Intelligent Systems](#) (Publisher: IEEE)
- [IEEE Journal of Biomedical and Health Informatics](#) (Publisher: IEEE)
- [IEEE MultiMedia](#) (Publisher: IEEE)
- [Discover Applied Sciences](#) (Publisher: Nature)
- [Scientific Reports](#) (Publisher: Nature) – **Certificate**
- [Applied Geomatics](#) (Publisher: Springer) – **Certificate**
- [Artificial Intelligence Review](#) (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**
- [Earth Science Informatics](#)(Publisher: Springer Nature) – **Certificate**
- [The Journal of Supercomputing](#) (Publisher: Springer Nature)
- [Pattern Recognition](#) (Publisher: Elsevier) – **Certificate**
- [Neurocomputing](#) (Publisher: Elsevier) – **Certificate**
- [Computer Vision and Image Understanding](#) (Publisher: Elsevier) – **Certificate**
- [Neural Networks](#) (Publisher: Elsevier) – **Certificate**
- [Computers and Geosciences](#) (Publisher: Elsevier)
- [CAAI Transactions on Intelligence Technology](#) (Publisher: Elsevier)
- [Tsinghua Science and Technology](#) (Publisher: Elsevier)
- [Plant Methods](#) (Publisher: BioMed Central) – **Certificate**
- [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**
- [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

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- **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](https://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](https://thaivivat.co.th)

## COMMUNITY SERVICE

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

- CUICU Large Language Model (LLM)** 14th Critical Care Conference  
*King Chulalongkorn Memorial Hospital, Bangkok, Thailand*  
 I presented CUICU, an independent, self-funded project aimed at supporting ICU healthcare professionals in Thailand by building accessible AI tools. The project focuses on customizing unsupervised instruction-finetuned language models for critical care applications, addressing the challenges of limited labeled datasets and inadequate hospital infrastructure. Key areas of impact include fast predictions for early sepsis detection, accurate mortality risk estimation, and providing understandable, clinically relevant explanations. [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 Chub, 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

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- 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](#)

- **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](#)
- **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

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- **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

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- **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.

- **About Me<sup>1</sup>**

I'm [Teerapong Panboonyuen](#), but you can call me [Kao Panboonyuen](#) or just [Kao](#).

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