

# Podchara Klinwichit

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Data Scientist & Electrical Engineer

## Contact Address

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## Summary

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A highly analytical Electrical Engineer with a Ph.D. in Data Science. My background includes extensive experience in power electronics and electrical machines, complemented by advanced skills in real-time monitoring and AI. I am eager to contribute my unique blend of engineering and data science expertise to optimize system performance and efficiency

## Skills

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### Technical Skills:

- Programming & Scripting:** Python, PHP, JavaScript, MATLAB, SQL
- Web Technologies:** HTML, CSS
- Electrical & Electronics:** Power Electronics, Electrical Machines
- Data & Analytics:** Image Processing, Artificial Intelligence
- Systems & Hardware:** IoT (Internet of Things), Inverter

**Soft Skills:** Collaboration, Communication, Problem-Solving, Leadership

### Language Skills:

- CU-TEP: Score 73/120 (Upper Intermediate)

## Education

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**Doctor of Philosophy (Ph.D.) in Data Science**, Burapha University, *Thailand* | *May, 2020 - Aug, 2025*

Dissertation: Lumbar Spinal Disease Identify on High Complex Plain Film X-ray

Research Focus:

1. Developed a collaborative dataset for medical image analysis in partnership with Faculty of Medicine, Burapha University, Thailand and the Korea Institute of Oriental Medicine, Republic of Korea.
2. Proposed a new technique, the "Turbulent Region Model" (TRM), for accurate lumbar spine localization.
3. Introduced a new feature, the "Diagonal Ratio," to classify spondylolisthesis, demonstrating its superior invariance to translation and rotation compared to traditional features.

**Master of Engineering (M.Eng.) in Electrical Engineering**, King Mongkut's Institute of Technology Ladkrabang, *Thailand* | *Aug, 2016 - Jan, 2020*

Thesis: Design of a Real-Time Electrical Power Monitoring System and Electrical Demand Analysis for a Hospital Building

Research Focus:

1. Developed a real-time electrical power monitoring system for a hospital building using embedded systems and Internet of Things (IoT) technology.
2. Integrated circuits to measure building temperature and humidity, logging data from 32 circuits of a 3-phase electrical system at a rate of one measurement per second.
3. Proposes a forecasting method using multiple regression analysis to predict power demand and detect real-time usage anomalies.

**Bachelor of Engineering (B.Eng.) in Electrical Engineering**, King Mongkut's Institute of Technology Ladkrabang, *Thailand* | *Jun, 2012 - May, 2016*

Thesis: Starter of HSPMSG for Gas Turbine System

Research Focus:

1. Designed and developed a High-Speed Permanent Magnet Synchronous Generator (HSPMSG).
2. Engineered a variable frequency voltage source by integrating a buck converter with a 6-step inverter to control the synchronous speed of the permanent magnet machine.

## Experience

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**Teaching:**

1. **Graduate Teaching Assistant, Ph.D. in Data Science Program**, Provided instruction and grading support for graduate-level courses, including Computer Vision and Mathematics for Computing, Faculty of Informatics, Burapha University, Thailand (2023)
2. **Graduate Teaching Assistant, Master of Engineering Program**, Assisted with foundational electrical engineering courses, specializing in Electrical Machines and Electrical Circuits, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang (2018).

## Working:

1. **Engineering Consultant**, Consulted on Electrical Machine, Power Electronics and IoT projects, A.S.B. Engineering | Bangkok, Thailand
2. **Engineering Lecturer**, Provided expert instruction on Electrical Machines and Electrical Circuits to technical staff, improving operational efficiency, A.S.B. Engineering | Bangkok, Thailand
3. **Engineering Intern**, Airports of Thailand | Bangkok, Thailand (2015)

## Research & Collaboration

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1. Project Coordinator, Faculty of Informatics, Burapha University, Thailand | 2021 - 2023

Managed a three-year international research collaboration between Burapha University (BUU) and the Korea Institute of Oriental Medicine (KIOM).

Successfully coordinated the following projects focused on medical image analysis:

1. Adaptive Abnormal Detection of Lumbar Vertebrae Alignment (2021)
  2. Automated Identification of Abnormal Lumbar Vertebrae Pose in X-Ray images (2022)
  3. Collecting X-ray Dataset and Developing Machine Intelligence Algorithms for Identifying Lumbar Spine Disorder (2023)
2. Collaborator, Faculty of Medicine, Burapha University, Thailand | Ongoing
    1. Project Title: Application of Artificial Intelligence in Lateral Lumbar Spine Radiograph Analysis to Predict the Likelihood of Surgery in Patients with Lumbar Disc Degeneration

2. Focus: Contributing to an ongoing research collaboration that applies Artificial Intelligence and computer vision to analyze medical radiographs. The project aims to develop a predictive model that can assess the likelihood of surgical intervention in patients with lumbar disc degeneration

## Academic Service

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1. MC & Challenge Lead, Hackathon Events | Burapha University | (2022 - 2023)
  1. Hackathon BUU Spine Dataset (2022)
  2. AI/ROBOTICS FOR ALL SUPER AI Engineering SEASON 3, AI Hackathon: Lumbar Spine (2023)
2. Conference Staff, International Conference on Knowledge and Smart Technology (KST) (2021 - 2023)

## Managements

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1. Developed a comprehensive data collection system for [the BUU Healthy University Rating System \(BUU-HURS\)](#).

## Publications

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### Journal Articles

1. (Q1) **Klinwichit, P.**, Yookwan, W., Onuean, A., Horkaew, P., Limchareon, S., Jang, J. S., ... & Chinnasarn, K. (2024). An invariant geometric feature for inter-subject lumbar curve alignment to detect spondylolisthesis. IEEE Access.
2. (Q2) **Klinwichit, P.**, Yookwan, W., Limchareon, S., Chinnasarn, K., Jang, J. S., & Onuean, A. (2023). BUU-LSPINE: A thai open lumbar spine dataset for spondylolisthesis detection. Applied Sciences, 13(15), 8646.
3. (Q4) Limchareon, S., Kongpromsuk, S., **Klinwichit, P.**, & On-Uean, A. (2022). Radiologist's Role in Artificial Intelligence Era. Siriraj Medical Journal, 74(12), 891-894.

### Conference Proceedings

1. **Klinwichit, P.**, Chinnasarn, K., Onuean, A., Limchareon, S., Lee, S. H., & Jang, J. S. (2022, October). The Radiographic view classification and localization of Lumbar spine using Deep Learning Models. In 2022 13th International

Conference on Information and Communication Technology Convergence (ICTC) (pp. 1316-1319). IEEE.

2. **Klinwichit, P.**, Ham, J. G., & Chinnasarn, K. (2021, June). Vertebrae Pose Segmentation based on Temporal Anisotropic Diffusion and Ensembled Gradient. In 2021 18th International Joint Conference on Computer Science and Software Engineering (JCSSE) (pp. 1-6). IEEE.
3. Saengsai, A., Onuean, A., Thumcharoen, W., Boonsongsrikul, A., **Klinwichit, P.**, Chinnasarn, K., ... & Wattanamongkhol, N. (2024, February). Broadband Internet Speed Dashboard for Sustainable Service Improvement in Thailand. In 2024 IEEE International Conference on Big Data and Smart Computing (BigComp) (pp. 418-423). IEEE.