Curriculum Vitae – Thanasak Wanglomklang

Personal Information

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Professional Objective

PhD student in Mechanical Engineering at École Centrale de Lyon with expertise in optimization under uncertainty, machine learning, and high-frequency vibroacoustic simulation. Developed innovative methods for noise reduction, uncertainty quantification, and shape optimization, with applications in aircraft cabin design. Additionally, I have extensive expertise in control systems, including dynamics and system modeling, as well as designing and deploying embedded control systems. Experienced in teaching, industrial training, and software development in the field of vibration and control systems. Initially developed the Python library PyEGRO for robust design optimization. Passionate about integrating advanced AI-driven solutions into engineering research.

Skills

Languages: Thai (Native), English (Fluent), French (Intermediate)

Programming Languages: Python, MATLAB, C/C++

Python Frameworks: *Scientific*: NumPy, Pandas, Matplotlib, SciPy, joblib, *GUI application*: PySide6, Tkinter, *Machine Learning*: PyTorch, GPyTorch, scikit-learn, Optuna, *Optimization and Geometric Computation*: Pymoo, SALib, PyVista, PyGeM

Modeling & Simulation: SolidWorks, AutoCAD, MATLAB, Gmsh, Comsol

Techniques: Robust Optimization, Bayesian Optimization, Gaussian Process Regression, Artificial Neural Network, Uncertainty Quantification, Control Theory, Modal Analysis

Hardware: Embedded hardware, Analog and Digital sensor devices

Education

École Centrale de Lyon, France *2023–Present*
PhD in Mechanical Engineering
Research Topic: Robust Shape Optimization Under Vibro-Acoustic Criteria Using Gaussian Process Approaches
Focus: Shape optimization under uncertainty, uncertainty quantification, GPR with adaptive sampling strategies, Multi-Fidelity using Co-Kriging and multi-objective design with ANN models. Application in aircraft cabin design for high-frequency noise reduction.

Suranaree University of Technology, Thailand
Master's in Mechatronic Engineering *03/2018–10/2019*
Research Topic: Linear bearing fault detection using an artificial neural network based on a PI servo system with the observer for high-speed automation machines.

Bachelor's in Mechanical Engineering *07/2014–03/2018*
First Class Honors, GPAX: 3.94/4.00

Employment History

Lecturer Suranaree University of Technology *2020–2023*
Achievements:
- Conducted research on dynamics and system modeling, control system design, structural vibration and AI applications in engineering
- Provided educational and industrial training in:
  - Measurement Methods, Interface, and Display
  - Embedded Control Systems
  - Programming and Control of CNC 3-Axis Machining Center

Master (Internship) Western Digital Storage Technologies (Thailand) Ltd. *2018–2019*
Achievements:
- Control systems design using frequency response and model-based tuning for 3-Axis linear motion
- Conducted vibration measurement and analysis for machine fault detection

Projects

- **PyEGRO:** Created an open-source Python library for optimization under uncertainty. Integrating adaptive infill for efficient experiment sampling. Supported GPR and ANN model for accelerating in optimization loop.
- **MES-Acoustic Version 1.0:** Designed software for predicting and optimizing noise in vibro-acoustic environments with user-friendly visualization and parameter setup
- **FFT Analysis Software:** Designed program for vibration sensor interfacing and signal processing. Applied in educational training sessions.
- **Balancing System Software (V1.2):** Developed tool for single-plane rotor balancing used in industrial training programs
- **Process Control Software:** Implemented GUI-based application for temperature and motor speed control demonstrating PID tuning.
- **Measurement and Calibration Software:** Developed software solution for analog sensor calibration

Awards

- **Franco-Thai Scholarship** for PhD studies in France (2023)
- **Master's Scholarship:** Western Digital Storage Technologies (Thailand) Ltd. (2019)
- **Best Presentation Award:** 2019 International Conference on Mechanical, Electronics, and Robotics Engineering (MERE 2019), Wuhan, China (2019)
- **Financial Support for Doctoral Mobility:** MEGA Doctoral School, Université de Lyon (2025)

Publications

- **Wanglomklang, T.**, Chommuangpuck, P., & Srisertpol, J. (2021). Energy Consumption and Vibration of Auto Core Adhesive Mounter Machine in Case of Linear Bearing Failures. *RMUTSB Academic Journal*, 7(2), 234-246.
- **Wanglomklang, T.**, Chommaungpuck, P., & Srisertpol, J. (2020). Linear Bearing Fault Detection Using an Artificial Neural Network Based on a PI Servo System with the Observer for High-speed Automation Machine. *IOP Conference Series: Materials Science and Engineering*, 717(1), 012011.
- Thongtan, W., Odngam, S., **Wanglomklang, T.**, & Srisertpol, J. (2020). The Effect of Shaft Whirling on Accuracy of Rotating Coil Magnetic Measurement System. *IOP Conference Series: Materials Science and Engineering*, 717(1), 012012.
- Chommuangpuck, P., **Wanglomklang, T.**, Tantrairatn, S., & Srisertpol, J. (2020). Fault tolerant control based on an observer on PI servo design for a high-speed automation machine. *Machines*, 8(2), 22.
- Chommuangpuck, P., **Wanglomklang, T.**, & Srisertpol, J. (2021). Fault detection and diagnosis of linear bearing in auto core adhesion mounting machines based on condition monitoring. *Systems Science & Control Engineering*, 9(1), 290-303.
- **Wanglomklang, T.**, Chommaungpuck, P., Chamniprasart, K., & Srisertpol, J. (2022). Using fault detection and classification techniques for machine breakdown reduction of the HGA process caused by the slider loss defect. *Manufacturing Review*, 9, 21.
- **Wanglomklang, T.**, Tuntavesesak, T., Tumthong, W., & Srisertpol, J. (2022). Roller Bearing Faults Classification Using Artificial Neural Network Based on Servo System with Observer Design. *WSEAS Transactions on Systems*, 21, 241-246.
- Khaengkarn, S., Nonkeaw, K., Wonglomklang, T., & Srisertpol, J. (2022). Real-Time Tracking and Environmental Monitoring System for Ice Trucks using IoT Techniques. *WSEAS Transactions on Information Science and Applications*, 19, 297-302.
- Seangsri, S., **Wanglomklang, T.**, Khaewnak, N., Yachum, N., & Srisertpol, J. (2023). Optimizing Ultra-High Vacuum Control in Electron Storage Rings Using Fuzzy Control and Estimation of Pumping Speed by Neural Networks with Molflow+. *Systems*, 11(3), 116.
- **Wanglomklang, T.**, Gillot, F., and Besset, S. (2024). An intersection interaction hybrid method for energy flow at mid-high frequency for complex cavities acoustic. *Proceedings of the 9th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS Congress 2024)*, Lisboa, Portugal, June 3-7, 2024.
- **Wanglomklang, T.**, Gillot, F., & Besset, S. (2025). Hybrid Method for Energy Flow in Mid-High Frequency Acoustics: Applications in Robust Shape Optimization for Complex Cavities. *Journal of Theoretical and Computational Acoustics*. doi: 10.1142/S2591728525500033.

Conferences

- **Wanglomklang, T.**, Chommaungpuck, P., and Srisertpol, J. (2019). Energy loss analysis of linear bearing failures in automatic slider attaching process. *Proceeding of 15th Conference on Energy Network of Thailand (E-NETT)*, May 22–24, 2019.
- **Wanglomklang, T.**, Chommaungpuck, P., and Srisertpol, J. (2019). Linear bearing fault detection using an artificial neural network based on a PI servo system with the observer for high-speed automation machine. *Proceeding of 2019 International Conference on Mechanical, Electronic and Robotics Engineering*, Wuhan, China, November 9-11, 2019.
- Thongtan, W., Odngam, S., **Wanglomklang, T.**, and Srisertpol, J. (2019). The effect of shaft whirling on accuracy of rotating coil magnetic measurement system. *Proceeding of 2019 International Conference on Mechanical, Electronic and Robotics Engineering*, Wuhan, China, November 9-11, 2019.
- Thamcharoen, T., Srisertpol, J., **Wanglomklang, T.**, Chommaungpuck, P., and Deeying, J. (2020). Fault detection and diagnosis via machine learning for preventing slider loss defect. *Proceeding of Conference of Mechanical Engineering Network of Thailand (ME-NETT)*, Thailand, July 15–17, 2020.
- Nimthanee, P., Sri-on, T., **Wanglomklang, T.**, and Srisertpol, J. (2021). A wireless monitoring system for cannabis drying chamber. *Proceeding of the 44th Electrical Engineering Conference (EECON44)*, Thailand, November 17-19, 2021.
- **Wanglomklang, T.**, Tuntavesesak, T., Tumthong, W., and Srisertpol, J. (2022). Artificial neural network-based fault classification of roller bearing using time responses with observer-based speed control. *6th European Conference on Electrical Engineering & Computer Science (ELECS 2022)*, Bern, Switzerland, December 21-23, 2022.
- **Wanglomklang, T.**, Gillot, F., and Besset, S. (2024). An intersection interaction hybrid method for energy flow at mid-high frequency for complex cavities acoustic. *The 9th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS Congress 2024)*, Lisboa, Portugal, June 3-7, 2024.
- **Wanglomklang, T.**, Gillot, F., and Besset, S. (2025). A Two-Stage Metamodeling Approach for Efficient Global Robust Optimization. *3rd IACM Digital Twins in Engineering Conference (DTE 2025) & 1st ECCOMAS Artificial Intelligence and Computational Methods in Applied Science (AICOMAS 2025)*, Paris, France, February 17-21, 2025.