TUNTATHORN (THARM) CHURSUK

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TECHNICAL PROFILE

Imperial Aeronautics PhD researcher developing ML surrogates for transient structural dynamics. Current work maps Abaqus plate fields to PyTorch for boundary-aware prediction and stable rollout toward accelerated fluid–structure interaction (FSI). MEng thesis delivered validated PZT impact localisation and classification for composite hydrogen tanks.

TECHNICAL SKILLS

Simulation ML: Neural surrogates, transient field prediction, autoregressive rollout, state/target design, boundary-condition encoding, solver-to-ML pipelines
ML / Scientific Python: Python, PyTorch, XGBoost, CNNs, LSTMs, NumPy, SciPy, Pandas, MATLAB, signal processing, benchmarking
Simulation / CAE: Abaqus FEA, computational mechanics, structural dynamics, 3DEXPERIENCE, PZT sensing
Research Software: Config-driven runners, Git/GitHub, checkpoints, JSON/JSONL logs, train/validation/held-out splits

PROJECTS & RESEARCH

Simulation ML Surrogates for Structural Dynamics Oct 2025 – Present
Imperial College London PhD, supervised by Dr. Vito Tagarielli *London, United Kingdom*

- Built Abaqus elastic/plastic plate workflows, converting transient FE fields into structured-grid inputs for a PyTorch surrogate prototype
- Implemented reproducible solver-to-model experiments with config-driven runners, checkpoints, structured logs and rollout diagnostics
- Showed one-step error can hide unstable rollout; now testing state, targets and DOF-aware boundary encodings before held-out validation

Master's Thesis: ML Structural Health Monitoring for Composite Tanks Oct 2024 – Jun 2025
Imperial College London *London, United Kingdom*

- Built a MATLAB-to-Python passive PZT pipeline for composite-tank impact localisation/classification using arrival-time, amplitude and energy features
- Achieved 1.07 cm localisation RMSE and 99.4% hard/soft impact classification accuracy under 10-fold cross-validation across 2,278 controlled impact cases
- Benchmarked XGBoost, ANN and hybrid ConvXGB; selected XGBoost for the best accuracy/runtime trade-off

AI Flood-Risk Venture Aug 2024 – Sep 2025
Co-Founder and CTO, RIFFAI *Bangkok, Thailand*

- Co-founded RIFFAI and led technical direction for an AI flood-risk venture, translating weather, hydrological and satellite data into an early-warning prototype for Mekong-region use cases

Vehicle Routing Optimisation Jul 2023 – Sep 2023
Artificial Intelligence Intern, Integrum Global *Singapore, Singapore*

- Built and integrated capacitated vehicle-routing-with-time-windows (CVRPTW) routines into a development-team web workflow

EDUCATION

Imperial College London Oct 2025 – Present
PhD in Aeronautics *London, United Kingdom*

Imperial College London Oct 2021 – Jun 2025
MEng Aeronautical Engineering, Upper Second-Class Honours *London, United Kingdom*

- Thailand Government Full Scholarship (MHESI; Undergraduate–Master–PhD); President's Undergraduate Scholarship

TEACHING & LEADERSHIP

Graduate Teaching Assistant Oct 2024 – Present
Imperial College London *London, United Kingdom*

- Lead Structures 2 tutorials covering structural dynamics, computational mechanics and finite-element analysis; also teach Numerical Methods 1 using Python, Abaqus and 3DEXPERIENCE

President & Founding Team Feb 2023 – Present
Thai Society Innovation Network (TSIN) *London, United Kingdom*

- Lead a 20+ member UK network connecting Thai students and builders through partnerships and events
- Led Zero-to-One with Thai government partners (NRCT/MHESI), connecting UK-based Thai researchers to commercialisation, IP and market-validation support