Teo Yu Jie

8332 4860 — yujie@protonmail.com — linkedin.com/in/yujieteo/ — https://github.com/yujieteo?tab=repositories

Summary —

– Structural Mechanics Engineer applying machine learning to mechanical and aerospace systems.
– Experienced in physics-based modeling and ML-driven optimization for aeroacoustics, thermomechanics, and structural analysis.
– Skilled in automating simulation pipelines and cross-disciplinary collaboration, enabling 90 % faster analyses and more scalable design workflows.

Skills

Machine Learning	PyTorch, tinygrad, NumPy, SciPy, pandas, GANs, decision trees
Simulation	PyANSYS, ABAQUS, Ansys APDL, Patran/NASTRAN, surrogate modeling
Programming	C#, C, Python, MATLAB, Mathematica
Mathematics	Linear algebra and representation theory, probability theory, information theory
Systems	Linux, Gentoo, OpenBSD, Fedora
Soft Skills	Cross-disciplinary collaboration, communication, systems thinking

Experience

ST Engineering   **Jan 2024 – Present**
Structural Mechanics Engineer (Stress, Passenger to Freighter Conversions, Engineering Solutions)

– Implemented backpropagation-based sensitivity analysis on a 2-DOF aeroacoustics model to identify critical structural/acoustic parameters, enabling targeted model simplification and accelerating design iteration.
– Applied decision tree learning to evaluate parameter weightage for aeroacoustic design and interactions, guiding model simplification and experimental design.
– Developed C#/Powershell automation suite integrating with Microsoft Word/Excel/PowerPoint for rapid delivery of aircraft structural analyses (local/global static instability of frames), reducing workload from several months of analyses backlog to 1 week enabling team to meet certification deadlines.
– Led cross-functional technical discussions (mechanical, electrical, supply chain) to shape structural design proposals for globally competitive programs.

Advanced Micro Devices ("AMD")   **Jan 2023 – May 2023**
Machine Learning and Thermomechanics Simulation Intern

– Integrated finite element simulations with Python using PyANSYS to build a generative adversarial network (GAN)-based surrogate model for board-level reliability analysis, reducing simulation runtime by 99.5%.
– Developed open source automated simulation, ML pipelines, and architectural data workflows and internal visualisation tools for board level temperature cycling, saving over 300 man-hours within 2 months and cutting computation time by 99.5%.
– Standardised dynamic mechanical analysis + digital image correlation workflows in Python and Golang, enabling reproducible experiments and ML-ready data pipelines.

Education

Nanyang Technological University, Singapore
Aerospace Engineering
Specialisation in Mechanical Engineering, Honours (Highest Distinction), Accelerated Bachelor's

Projects

Mathematica Hobby Projects   **Jan 2024 – Present**
– Developed Mathematica notebooks exploring Monte Carlo, Markov chains, and measure-theoretic probability.

Crack chracterisation for hydrogel fracture simulation   **Jan 2023 – Dec 2023**
– Developed parametric fatigue model using Ogden hydrogel phenomenology in MATLAB.
– Simulated fracture and characterised crack morphology of inhomogenous hydrogel against experimental results using MATLAB generated material input files (ABAQUS) and meshing using ABAQUS and FORTRAN. Simulation methodology is using an experimental modified phase field methodology based on nodal temperature.