Phu Tran, PhD

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Summary

Data Scientist and Machine Learning Engineer with extensive experience applying data science and machine learning across diverse domains. Skilled in problem solving, data-driven problem formulation, designing and implementing ETL pipelines, and developing a range of ML algorithms, including supervised, unsupervised, and reinforcement learning. Familiar with cloud model deployment, CI/CD pipelines, and experience working with interdisciplinary teams, with a strong ability to communicate complex technical concepts clearly.

Skills

- **Machine learning**: Genrative AI, Transformers, Computer Vision, Reinforcement Learning, Supervised & Unsupervised Learning
- **Programming Frameworks**: Linux | Python | SQL | Scikit-learn | PyTorch | Ray | Weights and Biases | MLFlow | Git | DVC | CI/CD | AWS (EC2 & SageMaker) | FastAPI | Streamlit | Docker
- **Certificates**: Google Data Analytics Professional Certificate (completed 2021)

Experience

Postdoctoral Associate, Brandeis University – Waltham, MA, USA — Feb 2022 – present

- Lead multiple research projects to develop ML/AI models to forecast and control bio-inspired materials.
- Developed deep learning model (CNN, RNN) to measure velocities of object in experimental videos, significantly outperform existing rule-based method.
- Developed deep learning model (Quantized CNN Autoencoder, Transformers) to predict long-range dynamics of active materials, achieved prediction of 2 times longer into the future comparing to existing method.
- Developed reinforcement learning framework (PPO algorithms, CNN-based policy network) to control active materials in simulation and experiments.

Research Fellow, Nanyang Technological University – Singapore — May 2018 – Jan 2022

- Led projects to develop ML algorithms for predicting aircraft locations using satellite data and AI agent to assist air traffic controllers. Transformed operational requirements to high impact research questions, with 02 large datasets collected.
- Achieved 30% improvement in aircraft trajectory prediction by data augmentation and infusion, combined with enhanced GRU network architecture.
- Developed Human-AI (reinforcement learning for assisting human air traffic control) user interface software, resulting in 01 software prototype and 01 public demonstration in the prestigious Singapore Airshow 2020.
- Initiated and deployed a large MySQL database server in Linux (1.6 billion rows of time series data), serving 20 researchers.

Services and Other Achivements

- Publication Chair of The 1st International Conference on Artificial Intelligence and Data Analytics for Air Transportation (AIDA-AT 2020)
- Published 20+ peer-reviewed research articles, with 300+ citations on Google Research Scholar

Education

Nanyang Technological University, Singapore, PhD in Mechanical Engineering — Aug 2012 – July 2017

University of Technology, HCMC, Vietnam, BEng in Mechanical Engineering — Aug 2007 – Apr 2012