ASHLEY HOI-TING AU

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SKILLS

Programming: Python (NumPy, Pandas, PyTorch, TensorFlow), Java, C++, MATLAB, SQL
Mathematics: Probability, Statistical Inference, Optimization, Time-Series Analysis
Tools: Git, Linux, Docker, LaTeX
Specialized: Federated Learning, Graph Neural Networks, Secure Distributed Computing

RESEARCH & EXPERIENCE

DG-CoLearn: An Efficient Collaborative Learning Framework for Dynamic Graphs *Oct 2024 - Present*

- Proposed a lightweight collaborative learning framework for dynamic graphs in link prediction and node classification tasks.
- Designed a **duo-stage graph partitioning algorithm** in C++ for optimized computation distribution.
- Implemented secure client information sharing and evolving GNN with GRUs and CNNs.
- *Results:* Outperformed baselines in link prediction (↑ MRR by 225.4%) and node classification tasks. (In Submission)

Transforming Threats to Assets: Utilizing Malicious Backdoor Attack Models in FL *Nov 2023 - Sep 2024*

- Developed an aggregation method leveraging malicious models for improved FL training.
- Applied **PCA & clustering** to detect malicious clients from anomaly patterns.
- *Results:* 35% improvement in reducing backdoor accuracy. (In Submission)

Cathay Pacific Airways *Lantau Island, Hong Kong*
IT & Digital Internship *Jul 2022 - Aug 2022*

- Built a robust **threat-hunting model** for the Security Operations team, integrating with the Mandiant Portal.
- Integrated Cathay Shop with **Web 3.0** for innovative customer engagement.
- **Award:** Grand Award, 2022 Summer Internship Innovation Project.

EDUCATION

Visiting Researcher, CaMLSys, University of Cambridge *Oct 2025 - Present*
Supervisor: Prof Nicholas D. Lane
Conducted collaborative research on security and unlearning strategies on Federated Large Language Models.

PhD, Computer Science, University of Warwick *Oct 2023 - Present*
Supervisor: Dr Ligang He
A driven academic researcher interested in solving potential problems in Federated Learning. Currently focusing on Federated Dynamic Graph Learning.

Master of Engineering, Discrete Mathematics, University of Warwick *Sep 2019 - Jul 2023*
Completed a joint degree of Computer Science and Mathematics, gaining rigorous understanding of the subjects' theoretical aspects as well as applications to practical problems.

OTHER EXPERIENCES

Open Source Contribution, Flower Framework *June 2025*

- Contributed to Flower 1.19 by extending FedProx baseline to support FEMIST dataset with preprocessing matching the original paper
- **Pull Request impact**: Merged, 14 commits, 33 files changed.