Vinh-Hung (Tommy) Ly

tommyly.net   tommy.ly@columbia.edu   +1 (718) 637-9597

Education

Columbia University, New York   May 2025
    B.A. Computer Science and Statistics   GPA: 3.7/4.0
    Selected Coursework: Artificial Intelligence, Probabilistic Machine Learning (PhD), Statistical Analysis of Neural Data (PhD), Bayesian Statistics, Algorithms, Stochastic Processes, Time Series
    Honors: Knight-Hennessy Scholars Semi-Finalist (Top 6% of 8,000 applicants), Cohen Scholar ($25k), Columbia General Studies Honor Society (top 76 students/semester), Dean's List (6 semesters)

Royal Melbourne Institute of Technology Vietnam - B. Com   2013

Research Experience

The Mortimer Zuckerman Mind Brain Behavior Institute, New York   Summer 2024 - Present
Research Intern, Computational Neuroscience Lab   *Advisor: Prof. Liam Paninski*

- Developed a semi-supervised computer vision pipeline for pose estimation by integrating an Ensemble Kalman Smoother with iterative self-training, achieving a 10% improvement over baseline ensemble models; manuscript in preparation (github: pseudo-labeler)

Columbia Irving Medical Center, New York   Summer 2023
Research Intern, Program for Mathematical Genomics   *Advisor: Prof. Raúl Rabadán*

- Developed a hybrid CNN-Transformer deep learning model for chromatin accessibility prediction, processing 115 ATAC-seq datasets, achieving a Pearson correlation of 0.5

New York Genome Center, New York   Summer 2022
Research Intern, Tech Innovation Lab   *Advisor: Prof. Sanja Vicković*

- Created background correction and focal plane detection using dask and xarray for PySeq2500 microscopy

Open Source Contributions

- **PyTorch Geometric Contributor**: enhanced graph representation methods that address fundamental limitations in non-transitive relationships:
  - Implemented the attract-repel embeddings model and general-purpose wrapper, both accepted into PyTorch Geometric's neural network (official documentation)
  - Demonstrated performance improvements of up to +23% AUC across different architectures - Graph Convolutional Network, Graph Attention Network, GraphSAGE (example)
  - Developed repel-fraction analysis methodology for network characterization and authored a technical analysis on pseudo-Euclidean embeddings

Industry Experience

Uber Technologies Inc, New York, Singapore & Vietnam   2016 - 2020
Senior Regional Operations Manager

- Architected spatial-temporal analysis frameworks and complex SQL pipelines for cross-dispatch optimization and incentive burn rate calculation, processing 500k+ trips and validating predictions with experimental results for enhanced driver utilization and data reliability.

Skills & Activities

Technical Skills: Python, Java, C, SQL, PyTorch, Snowflake, dbt, Lightning AI, GCP, AWS, Git, Linux

Activities: Completed Ironman Maryland triathlon (2.4-mile swim, 112-mile bike, 26-mile run) in 14.5 hours