Tse-Sheng (Jason) Nan

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Education

University of Illinois Urbana-Champaign *Aug 2024 - Present*
Master of Computer Science (UIUC MCS) IL, US
– **Overall GPA:** 4.0/4.0

National Taiwan University *Sep 2019 - Jan 2024*
Bachelor of Electrical Engineering (NTUEE) Taipei, Taiwan
– **Last 60 credits:** 4.25/4.3 (4.0/4.0) **Major GPA:** 4.11/4.3 (3.91/4.0) **Overall GPA:** 4.04/4.3 (3.85/4.0)

Award & Publication

Nan, Tse-Sheng*, and Chia-Han Yeh*, et al. *"Action-Constrained Imitation Learning."* International Conference on Learning Representations (ICLR) 2025, under review. [Paper]

Gold Medal - 2017 World Mathematics Invitational (WMI) Finals

Technical Skills

Programming Languages: Python, C/C++, SQL, CUDA, JavaScript, Golang, MATLAB
Machine Learning: Deep Learning, Computer Vision, Reinforcement Learning, Robotics, NLP, LLM, Medical AI, Distributed Learning
Tools: PyTorch, TensorFlow, Numpy, OpenCV, Open AI Gym, scikit-learn, AWS, Azure, JAX, WandB, BigQuery, Git, Node.js

Work & Research Experience

Nan, Tse-Sheng*, and Chia-Han Yeh*, et al. *"Action-Constrained Imitation Learning."* [Paper] *Jul 2023 – Sep 2024*
International Conference on Learning Representations (ICLR) 2025, under review.
- Bridged the gap between human demonstrations and robots by designing a decision policy, enhancing robot learning capabilities.
- Improved state-of-the-art (SOTA) performance by 20% to 50% through the integration of dynamic time warping (DTW).
- Mitigated challenges related to occupancy measure distortion with model predictive control (MPC).
- Achieved results using 99% fewer environment steps, significantly increasing training efficiency.

Autonomous Research | *Autonomous, Computer Vision, 3D Reconstruction* *Feb 2023 – Jun 2023*
Industrial Technology Research Institute Taipei, Taiwan
- Achieved a 0.15 testing loss when accurately inferring the speed of a self-driving car using real-time image inputs.
- Reconstructed 3D point clouds using time series images from 4 cameras, enhancing spatial accuracy and depth perception.
- Lowered model loss by 66% through a causal Gaussian smoothing technique, leading to improved stability and prediction accuracy.
- Matched road marker feature points by training an advanced edge detection model, decreasing the loss of reconstruction by 80%.

Research Assistant | *Malware Detection, Federated Learning, Optimization, Covariance Matrix, NMF* *Jul 2021 – Jun 2022*
Network & Multimedia Lab Taipei, Taiwan
- Developed privacy-preserved federated GLASSO and ADMM algorithms, improving data security in collaborative environments.
- Enhanced NMF for effective relation extraction from the covariance matrix, leading to more accurate data analysis.
- Achieved 94% detection of malicious web ports with zero false positives.
- Gathered data from 8 different sources with a federated concept, detecting 5 more malware ports with the enlarged dataset.

Software R&D Intern | *Clustering, Unsupervised Learning, Data Analytics, BigQuery, SQL* *Jul 2023 – Aug 2023*
Trend Micro Taipei, Taiwan
- Achieved a 20% increase in product account creation rate by analyzing user behavior data.
- Segmented over 6,000 users into 5 distinct clusters using Gaussian Mixture Model (GMM), driving a 63% increase in sales through targeted customer engagement.
- Contributed to a projected 50% growth in business revenue by proposing 5 innovative marketing strategies.

Early Detection of Non-small Cell Lung Cancer | *BNN, Data Interpolation, Multimodal Learning* *Mar 2022 - Jun 2022*
Self-employment Taipei, Taiwan
- Achieved 95% prediction accuracy while preventing overfitting, enabling early detection of late-stage cancer.
- Augmented the dataset's size by 270% using a Bayesian model to interpolate incomplete data.
- Enhanced data efficiency by 1000% through the extraction of 15 key biomarkers using an MLP.

Leadership

General coordinator of 2022 NTUEE Camp: managed 130 workers and 120 attendants in a 6-day, 5-night camp.
General coordinator of 2018 Pan's Labyrinth Winter Camp: managed 45 workers and 60 attendants in a 3-day, 2-night camp.
Director of the Department of Public Relations in the 2021-2022 student association of NTUEE.