CHIA-CHENG (JERRY) YEN, PH.D.
Data Scientist

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SUMMARY

I am a data scientist who is interested in applying state-of-the-art ML algorithms to challenging problems and studying how to well combine the domain knowledge of the problems with the ML algorithms to better solve the problems. My expertise includes ML and its applications, especially related to 5G Networks, Security, Decision Making, and Optimization.

SKILLS

Languages: Python, PySpark, SQL, C/C++, Java, Matlab
Libraries: PyTorch, Tensorflow, Hugging Face
Tools/Platforms: Databricks, DEEP, DBeavor, Jupyter, Spyder
ML Techniques: CNN, RNN, LSTM, GNN, NLP, RL

EDUCATION

Ph.D. in Computer Science
University of California, Davis
📅 03/2022 📍 Davis, CA   GPA: **3.90**/4.0

M.S. in Computer Science
National Tsing Hua University
📅 07/2014 📍 Hsinchu, TW   GPA: **4.27**/4.3

B.S. in Computer Science
Fu Jen Catholic University
📅 06/2012 📍 Taipei, TW   GPA: **3.96**/4.0

INVITED TALKS

1. "How To Use Hugging Face: Basic Pipeline, Tokenizer, and Models," *The AT&T Internal Generative AI Seminar, Natural Language Processing Tutorial.* ▶

2. "Deep Reinforcement Learning Based Platooning Control for Travel Delay and Fuel Optimization," *The 25th IEEE International Conference on Intelligent Transportation Systems (ITSC)*, Sep. 2022. ▶

3. "Graph neural network based root cause analysis using multivariate time-series kpis for wireless networks," *The IEEE/IFIP Network Operations and Management Symposium (NOMS)*, Sep. 2022. ▶

4. "A Deep On-Policy Learning Agent for Traffic Signal Control of Multiple Intersections," *The 23rd IEEE International Conference on Intelligent Transportation Systems (ITSC)*, Sep. 2020. ▶

EXPERIENCE

Principal Member of Technical Staff
AT&T Research Labs (Director: Dr. Tracy Liu)
📅 06/2024-Present 📍 San Ramon, CA
Home Network Security for IoT Devices
- Develop a volumetric based ML model for detecting unusual usage behaviors for in-home IoT devices.

Fiber Speed Guarantee
- Analyze weekly speed test results for 8.6M AT&T fiber customers and pinpoint root causes of speed test failures.
- Discover the PON congestion issue that leads to high failure rates for a specific types of RG models.

GenAI Use-case
- Support *Ask Fiber*, an intelligent chatbot that can perform analyses to assist product/engineer teams.

Senior Member of Technical Staff
AT&T Research Labs (Director: Dr. Tracy Liu)
📅 09/2021-06/2024 📍 San Ramon, CA
QoS Metrics for LTE and NR
- Propose QoS metrics for monitoring LTE/NR performance.
- Develop a reliable approach to estimate combined LTE/NR performance.
- Secure 175K budget semi-annually to support our team.

Home Network APIs for AT&T Fiber Customers
- Propose a MLP model to forecast latency on Gaming, YouTube, Netflix, Disney+, Amazon Prime Video, Hulu, and FB for AT&T customers.
- Extend prediction coverage to 1.2M AT&T fiber customers.
- Achieve a prediction accuracy of 80% by multi-feature customer profiles.

Home Network Security for AT&T RG Customers
- Develop a deep learning model for detecting DDoS attacks and discovering vulnerabilities in home network.

Application Insights for Connected Cars
- Analyze data/time usage across different connected car manufactures.

AT&T Performance Guarantee
- Conduct LTE performance analysis for various user applications.

Data Science Intern
Ericsson (GAIA) (Manager: Dr. Wenting Sun)
📅 06/2021-09/2021 📍 Santa Clara, CA
GNN-based RCA algorithm for 5G wireless environments [6]
- Predict potential root cause nodes and identify a sequence of subsequent failures triggered by them.
- Achieve a prediction accuracy of 70% by applying the proposed GNN-RCA and involving more node features.

UCD Graduate Student Researcher
Network and Architecture Lab (Advisor: Prof. Dipak Ghosal)

📅 09/2017-06/2021 📍 Davis, CA
<u>Cyber-attacks to Delay Packets in 5G Networks</u>
- Assess the impact of ghost bearers on reular UEs.

<u>Security Vulnerabilities in Backpressure-based TSC [2][8]</u>
- Evaluate the impact of misinformation on modern TSC.
- Prevent 100% misinformation attacks by the proposed algorithms.

<u>DRL-based TSC for Multi-intersection Control [7]</u>

- Enhance learning capabilities of DRL-agents by a novel reward function and image features.
- Achieve *3x* speed-up during training by the proposed 2DSARSA.

<u>DRL-based Platoon Control for Fuel Optimization [1][5]</u>
- Reduce fuel consumption by 30% and travel delay by 80% using the proposed DRL-based platoon control.

SELECTED PUBLICATION

Journal Papers

[1] Hang Gao, **Chia-Cheng Yen**, and Michael Zhang, "DRL Based Platooning Control with Traffic Signal Synchronization for Delay and Fuel Optimization," *Transportation Research Part C: Emerging Technologies, 163, 104555*, 2024.

[2] **Chia-Cheng Yen**, Dipak Ghosal, Michael Zhang, and Chen-Nee Chuah, "Security Vulnerabilities and Protection Algorithms for Backpressure-Based Traffic Signal Control at An Isolated Intersection," *IEEE Transactions on Intelligent Transportation Systems*, 2021. 📄

[3] Yu-Tai Lin, **Chia-Cheng Yen**, and Jia-Shung Wang, "Video Popularity Prediction: An Autoencoder Approach with Clustering," *IEEE Access*, vol. 8, pp. 129285-129299, 2020. 📄

[4] Tai-Yu Chiu, Ting-Chieh Hsu, **Chia-Cheng Yen**, and Jia-Shung Wang, "Interpolation based consensus clustering for gene expression time series," *BMC Bioinformatics.2015;16:117.* 📄

Conference Papers

[5] **Chia-Cheng Yen**, Hang Gao, and Michael Zhang, "Deep Reinforcement Learning Based Platooning Control for Travel Delay and Fuel Optimization," *IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*, Sep. 2022. 📄

[6] **Chia-Cheng Yen**, Wenting Sun, Hakimeh Purmehdi, Won Park, Kunal Rajan Deshmukh, Nishank Thakrar, Omar Nassef, Adam Jacobs, "Graph neural network based root cause analysis using multivariate time-series kpis for wireless networks," *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, Sep. 2022. 📄

[7] **Chia-Cheng Yen**, Dipak Ghosal, Michael Zhang, and Chen-Nee Chuah, "A Deep On-Policy Learning Agent for Traffic Signal Control of Multiple Intersections," *IEEE 23rd International Conference on Intelligent Transportation Systems (ITSC)*, Sep. 2020. **Nominated for the best student paper award**. 📄

[8] **Chia-Cheng Yen**, Dipak Ghosal, Michael Zhang, Chen-Nee Chuah, and Hao Chen, "Falsified Data Attack on Backpressure-based Traffic Signal Control Algorithms," *IEEE Vehicular Networking Conference (VNC)*, Dec. 2018. 📄