CHIA-CHENG (JERRY) YEN

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RESEARCH INTERESTS

- Reinforcement Learning, Traffic Networks, Cyber-security, WSNs

EDUCATION

PhD student in Computer Science **09/2017-present**
University of California, Davis
- Current GPA: 3.88/4.0

Master of Science in Computer Science **09/2012-07/2014**
National Tsing Hua University, Hsinchu, Taiwan
- Overall GPA: 4.27/4.3 (50% Academic Average and 50% Thesis)

Bachelor of Science in Computer Science and Information Engineering **09/2008-06/2012**
Fu Jen Catholic University, Taipei, Taiwan
- Overall GPA: 3.96/4.0 (Major GPA: 4.0/4.0)
- Best Ranked 1st, Average Ranked 2nd in class

RESEARCH EXPERIENCES

Network and Architecture Lab (Advisor: Professor Dipak Ghosal) **09/2017-present**
University of California, Davis
- Backpressure-based Schemes for Maximizing Throughput at Multiple Intersections [1][6]
  - Apply the network model to schedule traffic signal controls for multiple intersections
  - Security analysis on Backpressure-based schemes
- Delay-based Deep Reinforcement Learning for Multiple Intersections [5]
  - Propose a two-level architecture for scheduling traffic movements in multiple intersections
  - Propose traffic flow maps (TFMs) to dynamically model states of the traffic network
  - Apply SARSA, SARSA λ, and Q-learning with deep neural networks to traffic control problems

Visual Communication Lab (Advisor: Professor Jia-Shung Wang) **09/2012-07/2014**
National Tsing Hua University, Hsinchu, Taiwan
- Distributed Delivery of Videos over Ultra-dense Networks [7][9]
  - Deploy distributed storage using LT codes on cloud platform for popular videos
  - Evaluate distributed delivery techniques for hot videos over ultra-dense wireless environments
- Clustering Algorithm for Gene Expression Data [4]
  - Affinity propagation-based clustering algorithm for time-series gene expression data
  - Outperform other methods when the same datasets were used in the evaluation
- Data Compression in WSNs [2][8]
  - Tree-structured linear approximation with optimal RD control method for IoT Data
  - Considering the heterogeneity of sensors simultaneously using the R-D distortion allocation

PUBLICATIONS

Journal Papers

[1] **Chia-Cheng Yen**, Dipak Ghosal, Michael Zhang, and Chen-Nee Chuah, "Security Vulnerabilities and Protection Mechanisms for Backpressure-based Traffic Signal Control," *IEEE Transactions on Intelligent Transportation Systems*, 2019, **Under Review**.

[2] **Chia-Cheng Yen**, Chu-Ming Wang, Wan-Yane Yang, and Jia-Shung Wang, "Homogeneous and Heterogeneous IoT Data Compression using Tree-Structured Linear Approximation Approach," *ACM Transaction on Sensor Network*, 2019, **Under Review**.

[3] Yu-Tai Lin, **Chia-Cheng Yen**, and Jia-Shung Wang, "Video Recommendation and Popularity Prediction: An Auto-encoder Approach with Clustering," *ACM Transaction on Information Systems*, 2019, **Under Review**.

[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**, Dipak Ghosal, Michael Zhang, and Chen-Nee Chuah, "A Deep On-policy Learning Traffic Signal Control Using Traffic Flow Maps for Multiple Intersections," *IEEE 23rd International Conference on Intelligent Transportation Systems*, Sep. 2020, **In Progress**.

[6] **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*, Dec. 2018.

[7] Yi-Ting Chen, **Chia-Cheng Yen**, Yu-Tai Lin, and Jia-Shung Wang, "Cooperative Caching Plan of Popular Videos for Mobile Users by Grouping Preference," *IEEE 16th International Conference on Pervasive Intelligence and Computing (PiCom)*, Aug. 2018.

[8] Chu-Ming Wang, **Chia-Cheng Yen**, Wan-Yane Yang, and Jia-Shung Wang, "Tree-Structure Linear Approximation for Data Compression over WSNs," *IEEE 12th International Conference on Distributed Computing in Sensor Systems (DCOSS)*, May 2016.

[9] **Chia-Cheng Yen** and Jia-Shung Wang, "Distributed Delivery of Popular Videos over Ultra-Dense Networks," *IEEE Symposium on Computers and Communication (ISCC)*, Jul. 2015.

[10] Hsien-Tzu Chiu, **Chia-Cheng Yen**, and Jia-Shung Wang, "A Framework of Temporal Data Retrieval for Unreliable WSNs Using Distributed Fountain Codes," *IEEE 9th International Conference on Mobile Ad-hoc and Sensor Networks (MSN)*, Dec. 2013.

Work & Teaching Experiences

Teaching Assistant, ***Department of Computer Science*** **03/2018-present**
University of California, Davis, CA, USA
- ECS 10, ECS 50, ECS 154A, ECS 122A
- Led discussion classes and assisted students with programming and examining

Graduate Student Researcher, ***Network and Architecture Lab*** **09/2017-present**
University of California, Davis, CA, USA
- Research topics including Reinforcement Learning, Traffic Signal Control, and Security

Research Assistant, ***Advanced Network Technologies and Services Lab*** **04/2017-08/2017**
Institute of Information Science, Academia Sinica, Taiwan
- Research topics including Wireless Networks and Machine Learning

Research Assistant, ***Visual Communication Lab*** **09/2012-07/2014**
National Tsing Hua University, Hsinchu, Taiwan
- Research topics including Networks, Clustering, Stereo Matching, and Data Compression
- Attended IEEE 9th International Conference on Mobile Ad-hoc and Sensor Networks, International Workshop on Software Defined Sensor Networks, Dalian, China, December 11-13, 2013

Awards

NSF Travel Grant Award **12/2018**
- Awarded to students whose research paper is accepted by VNC [3]
- Selection is based on student merit qualifications and financial need

Academic Excellence Award (7 times) **09/2008-06/2012**
- Awarded to students with top 5% GPA for that semester
- Provided scholarships to students with top 5% GPA for that semester

Second Best Project Award, Department of Computer Science and Information Engineering, FJCU **11/2011**
- Ranked 2nd out of 27 teams

Selected Term Projects

Online Ticketing System, ***Department of Computer Science and Information Engineering, FJCU***
- Utilized Oracle to build up an online ticketing system for railway
- Supported multiple users for simultaneous booking

Multimedia Sharing System, ***Department of Computer Science and Information Engineering, FJCU***
- Shared movies or music with friends through MSN
- Utilized peer-to-peer communication and adjusted transmission rate dynamically
- Applied distributed streaming mechanism and circular buffer technique
- Awarded second place prize

Stereo Matching, ***Visual Communication Lab***
- Implemented Horizontal and Vertical Consideration on Cost Initialization
- Implemented Domain Transform on Cost Aggregation
- Improved disparity estimation method

Programming Languages

- **Proficient with**: C/C++, Python, Java, Matlab
- **Comfortable or Familiar with**: HTML, Assembly