

CHIA-CHENG (JERRY) YEN

418 Russell Park Apt1, Davis CA, 95616, USA

 (530)-761-6752 |  ccyen@ucdavis.edu |  [jerry-yen](https://www.linkedin.com/in/jerry-yen) |  [ccyen](https://plus.google.com/ccyen) |  [colouryen](http://colouryen.com)

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

Algorithms and Theory 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, **Submitted**.
- [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, **Submitted**.
- [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

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|---|-----------------|
| Teaching Assistant, Department of Computer Science
University of California, Davis, CA, USA <ul style="list-style-type: none"> ECS 10, ECS 50, ECS 154A, ECS 122A Led discussion classes and assisted students with programming and examining | 03/2018-present |
| Graduate Student Researcher, Network and Architecture Lab
University of California, Davis, CA, USA <ul style="list-style-type: none"> Research topics including Reinforcement Learning, Traffic Signal Control, and Security | 09/2017-present |
| Research Assistant, Advanced Network Technologies and Services Lab
Institute of Information Science, Academia Sinica, Taiwan <ul style="list-style-type: none"> Research topics including Wireless Networks and Machine Learning | 04/2017-08/2017 |
| Research Assistant, Visual Communication Lab
National Tsing Hua University, Hsinchu, Taiwan <ul style="list-style-type: none"> 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 | 09/2012-07/2014 |

AWARDS

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|---|-----------------|
| NSF Travel Grant Award <ul style="list-style-type: none"> Awarded to students whose research paper is accepted by VNC [3] Selection is based on student merit qualifications and financial need | 12/2018 |
| Academic Excellence Award (7 times) <ul style="list-style-type: none"> Awarded to students with top 5% GPA for that semester Provided scholarships to students with top 5% GPA for that semester | 09/2008-06/2012 |
| Second Best Project Award, Department of Computer Science and Information Engineering, FJCU <ul style="list-style-type: none"> Ranked 2nd out of 27 teams | 11/2011 |

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