Dengwang Tang

3740 McClintock Ave, Los Angeles, CA 90089, USA
dwtang@umich.edu (734)395-7009

EDUCATION

Ph.D. Electrical and Computer Engineering — GPA: 4.00
University of Michigan, Ann Arbor, MI,
Defense completion: September 2021
Degree conferral: December 2021

M.S., Mathematics — GPA: 4.00
University of Michigan, Ann Arbor, MI, April 2021

M.S., Electrical and Computer Engineering, Communications — GPA: 4.00
University of Michigan, Ann Arbor, MI, December 2018

B.S.E., Electrical and Computer Engineering — GPA: 3.81
University of Michigan – Shanghai Jiao Tong University Joint Institute
Shanghai Jiao Tong University, Shanghai, China, July 2016

B.S.E., Computer Engineering, *summa cum laude* — GPA: 3.93
University of Michigan, Ann Arbor, MI, April 2016
Minor: Mathematics

RESEARCH EXPERIENCE

Postdoctoral Researcher — October 2022 – Present
University of Southern California, Los Angeles, CA
Advisors: Rahul Jain, Ashutosh Nayyar, and Pierluigi Nuzzo

- Designed practical algorithms for solving multi-agent partially observable Markov decision processes (MA-POMDP)
- Implemented algorithms for solving MA-POMDP in Python
- Analyzed Informed Posterior Sampling algorithm for learning Markov Decision Processes (MDP)
- Analyzed Posterior Sampling algorithm for learning MA-POMDP

Postdoctoral Researcher — October 2021 – September 2022
University of California, Berkeley, CA
Advisor: Venkatachalam Anantharam

- Investigated and proved a group of properties related to the decomposition of correlated equilibria

Graduate Student — Fall 2016 – Summer 2021
ECE Department, University of Michigan, Ann Arbor, MI
Advisor: Vijay Subramanian

- Developed notions of information states in general dynamic games
- Proposed and investigated a dynamic information design problem

- Investigated information compression schemes in a family of dynamic games among teams
- Designed and analyzed a family of new load balancing schemes based on random walks on graphs
- Theoretically analyzed Scarf's algorithm for stable matching problems with couples
- Implemented Scarf's algorithm in Matlab and Python and investigated its performance through numerical simulations
- Developed a new approach to analyze the Markov chain associated with LRU (least recently used) caching algorithm
- Designed and analyzed a new family of priced mechanisms for combinatorial auctions with complementarities

Undergraduate Research Assistant Summer 2014
ECE Department, University of Michigan, Ann Arbor, MI

- Developed a new priced mechanism for spectrum allocation
- Analyzed the property of the mechanism
- Implemented the mechanism in Python

TEACHING EXPERIENCE

Graduate Student Instructor
ECE Department, University of Michigan, Ann Arbor, MI
EECS301: Probabilistic Methods in Engineering Winter 2020
EECS501: Probability and Random Process Winter 2018, Fall 2018

- Graded exams
- Held discussion sessions
- Provided help for students during office hour

Teaching Assistant Summer 2013
UM-SJTU Joint Institute, Shanghai Jiao Tong University, Shanghai, China
VV285: Honors Calculus III

- Graded homework and exams
- Held review sessions
- Provided help for students during office hours

WORKING EXPERIENCE

Software Engineering Intern May 2019 – August 2019
Google LLC., San Francisco, CA

- Analyzed process execution log data
- Trained a recurrent neural network to perform anomaly detection on process execution logs
- Implemented the local outlier factor method to perform anomaly detection on process execution logs

PAPERS

Journal Publications

1. B. Hao, R. Jain, **D. Tang**, Z. Wen, "Bridging Imitation and Online Reinforcement Learning: An Optimistic Tale" accepted to Transactions on Machine Learning Research (2023)
2. **D. Tang**, H. Tavafoghi, V. G. Subramanian, A. Nayyar, D. Teneketzis, "Dynamic Games among Teams with Delayed Intra-Team Information Sharing," Dynamic Games and Applications (2022)
3. **D. Tang**, V. G. Subramanian, "Random Walk Based Sampling for Load Balancing in Multi-server Systems," Proceedings of the ACM on Measurement and Analysis of Computing Systems (2019), Vol. 3(1), p. 14
4. **D. Tang**, V. G. Subramanian, "Eigenvalues of LRU via a Linear Algebraic Approach," Operation Research Letters (2018), Vol. 46(2), p.193-198

Preprints

1. **D. Tang**, V. G. Subramanian, "Derandomized Load Balancing using Random Walks on Expander Graphs," *arXiv preprint arXiv:1901.09094* (2019)
2. **D. Tang**, V. G. Subramanian, "Approximately Envy-Free Spectrum Allocation with Complementarities," *arXiv preprint arXiv:1606.01457* (2016)

Conference Papers

1. **D. Tang**, A. Nayyar, R. Jain, "A Novel Point-based Algorithm for Multi-agent Control Using the Common Information Approach," IEEE Conference on Decision and Control (CDC), (2023)
2. **D. Tang**, H. Tavafoghi, V. G. Subramanian, A. Nayyar, D. Teneketzis, "Private Information Compression in Dynamic Games among Teams," IEEE Conference on Decision and Control (CDC), (2021)
3. **D. Tang**, V. G. Subramanian, "Derandomized Asymmetrical Balanced Allocation," 57th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, USA, (2019)
4. **D. Tang**, V. G. Subramanian, "Balanced Allocation on Graphs with Random Walk Based Sampling," 56th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, USA, (2018) pp. 765-766.

PRESENTATIONS

1. **D. Tang**, A. Nayyar, R. Jain, "Point-based Algorithm for Multi-agent Control Using the Common Information Approach" presentation in SoCal Control Workshop at University of California Santa Barbara, Isla Vista, CA (2023)
2. **D. Tang**, H. Tavafoghi, V. G. Subramanian, A. Nayyar, D. Teneketzis, "Dynamic Games among Teams with Asymmetric Information," presentation in Centre for Intelligent Machines (CIM) and Groupe d'Etudes et de Recherche en Analyse des Decisions (GERAD) Virtual Informal Systems Seminar, Montréal, QC, Canada (2021)

3. **D. Tang**, V. G. Subramanian, "Derandomized Asymmetrical Balanced Allocation," presentation in 57th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL (2019)
4. **D. Tang**, V. G. Subramanian, "Balanced Allocation with Random Walk Based Sampling," presentation in Stanford CS Theory Lunch, Stanford, CA (2019)
5. **D. Tang**, V. G. Subramanian, "Random Walk Based Sampling for Load Balancing in Multi-Server Systems," presentation in ACM SIGMETRICS 19', Phoenix, AZ (2019)
6. **D. Tang**, V. G. Subramanian, "Balanced Allocation on Graphs with Random Walk Based Sampling," presentation in 56th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL (2018)
7. **D. Tang**, V. G. Subramanian, "Combinatorial Auctions with Complementarities," poster presentation in 7-th Midwest Control and Game Theory Workshop, East Lansing, MI (2018)
8. **D. Tang**, T. Nguyen, V. G. Subramanian, R. Vohra, "Computational Testing of Scarf Algorithm for Near Feasible Stable Matching with Couples," poster presentation in 6-th Midwest Control and Game Theory Workshop, Ann Arbor, MI (2017)

SERVICE

Reviewer 2022, 2023
IEEE Transactions on Automatic Control (IEEE-TAC)

Reviewer 2021,2023
IEEE Control Systems Letters (L-CSS) / IEEE Conference on Decision and Control (CDC)

Reviewer 2022
Systems & Control Letters (SCL)

Reviewer 2022
SIAM Journal on Control and Optimization (SICON)

Reviewer 2020
IEEE Control Systems Letters (L-CSS) / American Control Conference (ACC)

RELEVANT COURSEWORK

University of Michigan, Ann Arbor, MI

- ECON617 Game Theory
- EECS501 Probability and Random Process
- EECS502 Stochastic Processes
- EECS550 Information Theory
- EECS554 Digital Communication and Codes
- EECS557 Communication Networks
- EECS558 Stochastic Control

- EECS560 Linear Systems Theory
- EECS564 Estimation, Detection, Filtering
- EECS598 Special Topics: Mining Large-Scale Graph Data
- EECS598 Special Topics: Reinforcement Learning
- MATH562 Continuous Optimization Methods
- MATH596 Complex Analysis
- MATH597 Real Analysis
- MATH602 Functional Analysis
- MATH625 Probability and Random Process I
- MATH709 Brownian Motion
- MATH710 Measure Concentration

SKILLS

- Programming Skills: Matlab, C, C++, Python, Julia

REFERENCE

Prof. Vijay Subramanian, University of Michigan, ECE Department, 1301 Beal Avenue, Ann Arbor, MI, 48109-2122, USA.
Phone: (734) 615-1915
Mail: vgsubram@umich.edu

Prof. Demosthenis Teneketzis, University of Michigan, ECE Department, 1301 Beal Avenue, Ann Arbor, MI, 48109-2122, USA.
Phone: (734) 763-0598
Mail: teneket@umich.edu