

Duong T. A. Nguyen (Ella)

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RESEARCH INTEREST

My research interests lie at the intersection of Optimization, Operations Research, and Game Theory. The research focuses on developing algorithms for distributed optimization, mathematical models and optimization solutions for decision-making under uncertainty, fair and privacy-preserving mechanism designs. Research applications include cloud/edge computing, electric vehicles, smart health care, and large-scale multi-agent systems.

EDUCATION

Ph.D. student

School of Electrical, Computer and Energy Engineering, Arizona State University

Jan 2021 – Present

Tempe, Arizona

M.S. in Applied Mathematics

Department of Mathematics, University of Louisiana at Lafayette

Aug 2017 – Dec 2019

Lafayette, Louisiana

RESEARCH EXPERIENCE

Arizona State University

Research Assistant

Advisor: Dr. Duong Tung Nguyen | Google Scholar

Tempe, Arizona

Jan 2021 – Present

Aspen Technology Inc.

Research and Development Intern

Advisor: Dr. Josephine Elia | Google Scholar

Houston, Texas

May 2023 – Aug 2023

University of Louisiana at Lafayette

Research Assistant

Advisor: Dr. Longfei Li | Google Scholar

Lafayette, Louisiana

Jan 2019 – Dec 2020

PUBLICATIONS

Journal Publications

Duong T. A. Nguyen, Duong T. Nguyen, Angelia Nedić, **Accelerated AB/Push-Pull Methods for Distributed Optimization over Time-Varying Directed Networks**, IEEE Transactions on Control of Network Systems, 2023.

Angelia Nedić, Duong T. A. Nguyen, Duong T. Nguyen, **AB/Push-Pull Method for Distributed Optimization in Time-Varying Directed Networks**, Optimization Methods and Software, 2023.

Duong T. A. Nguyen, Duong T. Nguyen, Angelia Nedić, **Geometric Convergence of Distributed Heavy-Ball Nash Equilibrium Algorithm over Time-Varying Digraphs with Unconstrained Actions**, IEEE Control Systems Letters, 2023.

Duong T. A. Nguyen, Jiaming Cheng, Ni Trieu, Duong T. Nguyen, **A Fairness-Aware Attacker-Defender Model for Optimal Edge Network Operation and Protection**, IEEE Networking Letters, 2023.

Duong T. A. Nguyen, Longfei Li, Hangjie Ji, **Stable and Accurate Algorithms for Generalized Kirchhoff-Love Plates**, Journal of Engineering Mathematics, 2021.

Conference Proceedings

Duong T. A. Nguyen, Duong T. Nguyen, Angelia Nedić, **Geometric Convergence of Distributed Heavy-Ball Nash Equilibrium Algorithm over Time-Varying Digraphs with Unconstrained Actions**, Proceedings of the 62nd IEEE Conference on Decision and Control (CDC), Singapore, 2023.

Duong T. A. Nguyen, Duong T. Nguyen, Angelia Nedić, **Distributed Stochastic Optimization with Gradient Tracking over Time-Varying Directed Networks**, Proceedings of the 57th IEEE Asilomar Conference on Signals, Systems, and Computers, CA, USA, 2023.

Duong T. A. Nguyen*, Jiaming Cheng*, Duong T. Nguyen, Angelia Nedić, **CrowdCache: A Decentralized Game-Theoretic Framework for Mobile Edge Content Sharing**, Proceedings of the 21th IEEE International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), Singapore, 2023.

Jiaming Cheng*, Duong T. A. Nguyen*, Lele Wang, Duong T. Nguyen, Vijay K. Bhargava, **A Bandit Approach to Online Pricing for Heterogeneous Edge Resource Allocation**, Proceedings of the IEEE 9th International Conference on Network Softwarization (NetSoft), Madrid, Spain, 2023 (Acceptance rate: 20-25%).

Submitted papers (Under review)

Duong T. A. Nguyen, Mattia Bianchi, Florian Dörfler, Duong T. Nguyen, Angelia Nedić, **Nash Equilibrium Seeking Over Row-Stochastic Digraphs With Network Independent Step-sizes**. (Submitted to Control Systems Letters)

Duong T. A. Nguyen*, Jiaming Cheng*, Lele Wang, Duong T. Nguyen, **Optimal Workload Allocation for Distributed Edge Clouds With Renewable Energy and Battery Storage**. (Submitted to IEEE ICNC 2024)

Jiaming Cheng*, Duong T. A. Nguyen*, Duong T. Nguyen, **Two-Stage Distributionally Robust Edge Node Placement Under Endogenous Demand Uncertainty**. (Submitted to IEEE INFOCOM)

Duong T. A. Nguyen, Tarannum Nisha, Ni Trieu, Duong T. Nguyen, **A Mixed-Integer Bi-level Model for Joint Optimal Edge Resource Pricing and Service Placement**. (Submitted to IEEE Transactions on Networking)

Jiaming Cheng*, Duong T. A. Nguyen*, Ni Trieu, Duong T. Nguyen, **Delay-Aware Robust Edge Network Hardening Under Decision-Dependent Uncertainty**. (Submitted to IEEE Transactions on Networking)

Duong T. A. Nguyen, Duong T. Nguyen, Angelia Nedić, **Distributed Nash Equilibrium Seeking over Time-Varying Directed Communication Networks**, preprint arXiv:2201.02323.

PRESENTATIONS

2023 INFORMS Annual Meeting, **A Fairness-Aware Attacker-Defender Model for Optimal Edge Network Operation and Protection**, Phoenix, AZ, October 2023.

International Conference on Continuous Optimization (ICCOPT), **Distributed Nash Equilibrium Seeking over Time-Varying Directed Communication Networks**, Bethlehem, PA, July 2022.

2021 INFORMS Annual Meeting, **Market-based Mechanisms For Fair And Efficient Resource Allocation In Edge Computing**, Anaheim, CA, October 2021.

LA/MS Sectional Meeting of the Mathematical Association of America, **A Comparative Study of Physics-Informed Deep Learning Models for Discovering Partial Differential Equations**, Loyola University, New Orleans, LA, February 2020.

Annual Graduate Student Symposium, **Stable and Accurate Algorithms for Generalized Kirchhoff-Love Plates**, University of Louisiana at Lafayette, Lafayette, LA, November 2019.

AMS Sectional Meeting, **Stable and Accurate Algorithms for Generalized Kirchhoff-Love Plates**, University of California, Riverside, Riverside, CA, November 2019.

Posters

45th Annual New York State Regional Graduate Mathematics Conference, **Stable and Accurate Algorithms for generalized Kirchhoff-Love plates**, Syracuse University, Syracuse, NY, March 2020 (remote due to COVID-19).

SIAM Texas-Louisiana Annual Meeting, **A Stable and Accurate algorithm for a generalized Kirchhoff-Love plate model**, Southern Methodist University, Dallas, TX, November 2019.

WORKSHOPS AND SUMMER SCHOOLS

Foundations and Frontiers of Probabilistic Proofs, ETH, Zurich, Switzerland, July 26, 2021 to August 06, 2021.

Scientific Computing Around Louisiana (SCALA), Louisiana State University, Baton Rouge, LA, February 2020.

SIAM Texas-Louisiana Annual Meeting, Southern Methodist University, Dallas, TX, November 2019.

AWM Research Symposium, Rice University, Houston, TX, April 2019.

Louisiana Chapter of the ASA - Fall 2018 Meeting, Louisiana State University, Baton Rouge, LA, November 2018.

VIASM Mathematics Summer School, Quy Nhon University, Quy Nhon, Vietnam, July 2015.

HONORS AND AWARDS

Outstanding Research Award, Arizona State University, Spring 2022.

Engineering Graduate Fellowship, Ira A. Fulton Schools of Engineering, Arizona State University, Spring 2021.

Academic Excellence (GPA: 4.0/4.0), University of Louisiana at Lafayette, 2019, 2020.

Travel Award, Annual New York State Regional Graduate Mathematics Conference, Syracuse University, NY, February 2020.

Finalists of the Three Minutes Thesis Competition, University of Louisiana at Lafayette, Lafayette, LA, November 2019.
Best Posters Award, SIAM Texas–Louisiana Annual Meeting, Southern Methodist University, Dallas, TX, November 2019.
SIAM TX-LA Travel Award, Southern Methodist University, Dallas, TX, November 2019.
Outstanding Graduate Award (GPA: 3.89/4.0), Dalat University, Vietnam, June 2017.
Scholarship of the Key National Program on Development in Mathematics, Vietnam Institute for Advanced Study in Mathematics, Vietnam, 2015, 2016, 2017.

TEACHING EXPERIENCE

Arizona State University

Teaching Assistant

Tempe, Arizona

Jan 2021 – Present

- Fall 2022, Fall 2023: CSE 539 Applied Cryptography (TA)

University of Louisiana at Lafayette

Teaching Assistant

Lafayette, Louisiana

Aug 2017 – Dec 2018

- Fall 2018: MATH 103/104 College Algebra (Instructor)
- Spring 2018: STAT 214 Elementary Statistics (TA)
- Fall 2017: STAT 214 Elementary Statistics (TA)

COMPUTER SKILLS

MATLAB, Python, R, C#, SQL, Julia, SAS, CVX, Gurobi, Mosek, FICO Xpress

PROFESSIONAL SERVICES

IEEE Transactions on Automatic Control (Reviewer)
IEEE Transactions on Control of Network Systems (Reviewer)
IEEE Transactions on Signal Processing (Reviewer)
IEEE Control Systems Letters (Reviewer)
IEEE Networking Letters (Reviewer)
IEEE Conference on Decision and Control (Reviewer)
American Control Conference (Reviewer)