

# Duong T. A. Nguyen (Ella)

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Ph.D. candidate with a strong foundation in Distributed Optimization, Operations Research, and Game Theory. Experienced in designing and implementing data-driven solutions using Python, MATLAB, Julia. Proven ability to develop, test, and deploy complex algorithms. Contributed to open-source libraries, with 14+ publications and 2 pending US patents.

## EDUCATION

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### Arizona State University

*Ph.D. in Electrical Engineering (GPA: 4.0/4.0)*

**Thesis:** Distributed Methods for Large-Scale Optimization, Learning, and Games (*Dean's Dissertation Award*)

Tempe, Arizona

Jan 2021 – May 2025

### Princeton University

*Visiting Student Research Collaborator (with Prof. H. Vincent Poor)*

Princeton, New Jersey

Apr 2024 – May 2024

## TECHNICAL SKILLS

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**Programming:** Python, MATLAB, Julia, R, SQL, C#, SAS

**Optimization Technologies:** JuMP, CVX, Gurobi, Mosek, FICO Xpress

## PROFESSIONAL EXPERIENCE

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### Los Alamos National Laboratory

*Research Intern*

Los Alamos, New Mexico

Sep 2024 – Present

- Contributing to an open-source JuMP (Julia) optimization library for robust partitioning and operation in power distribution grids to enhance fault tolerance and maximize uncertain-load delivery.
- Developing decentralized optimization and cutting-plane algorithms to accelerate global solutions for non-convex networked microgrid problems, improving computational efficiency and scalability.
- Implementing unit tests and benchmarking strategies to ensure performance and reliability.

### AT&T Labs Inc.

*Research Intern*

Bedminster, New Jersey

Jun 2024 – Aug 2024

- Developed an Open RAN-compliant optimization framework enabling dynamic utilization of private and public cellular networks by detecting endpoint proximity to private coverage zones and optimizing connectivity. (*2 US patents pending*)
- Engineered a robust end-to-end data pipeline using Python and SQL to extract and analyze large-scale telecom data.
- Leveraged advanced analytics and predictive time-series modeling to deliver data-driven insights on network performance, and user behavior, fine-tuning models with cross-validation and performance metrics.

### Aspen Technology Inc.

*Research and Development Intern*

Houston, Texas

May 2023 – Aug 2023

- Engineered and benchmarked multiple optimization approaches using Python (Xpress), analyzing trade-offs in computational cost and accuracy on customer data, and presenting actionable insights to stakeholders.
- Integrated with and extended an in-house optimization solver (implemented in C#) to enhance unit commitment and optimal power flow solutions, reducing operation costs and environmental impact.

### Arizona State University

*Research Assistant*

Tempe, Arizona

Dec 2020 – Present

- Developed decentralized, privacy-preserving optimization, federated learning integrated with game theoretic approaches for networked multi-agent systems, ensuring secure and scalable distributed learning.
- Engineered optimal reinforcement learning-based real-time routing strategies for electric vehicles.
- Integrated adaptive robust, stochastic, and distributionally robust optimization frameworks for service placement, task offloading, and resource management, enabling resilient operations under uncertainty.

### University of Louisiana at Lafayette

*Research Assistant*

Lafayette, Louisiana

Jan 2019 – Dec 2020

- Developed stable and accurate numerical methods for generalized Kirchhoff–Love plates to simulate the reaction of various objects under diverse force conditions.

## HONOR AND AWARDS

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Dean's Dissertation Award (ASU, Spring 2025), University Grant Fellowship (\$12,000, ASU 2025), Best Student Paper Award Finalist at American Control Conference (ACC 2024), IEEE Conference on Decision and Control Student Travel Award (CDC 2024), INFOCOM Student Travel Award (2024), Best Paper Award Finalist (WiOpt 2023), Outstanding Research Award (2022), Engineering Graduate Fellowship (2021), Academic Excellence (2019, 2020), Best Poster Award in SIAM Meeting (2019), Finalist of the Three Minutes Thesis Competition (2019)

## PUBLICATIONS ( Google Scholar)

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1. **D. T. A. Nguyen**, D. T. Nguyen, A. Nedić, “*Distributed Nash Equilibrium Seeking over Time-Varying Directed Networks*”, IEEE Transactions on Control of Network Systems, 2025.
2. **D. T. A. Nguyen\***, J. Cheng\*, N. Trieu, D. T. Nguyen, “*Delay-Aware Robust Edge Network Hardening Under Decision-Dependent Uncertainty*”, IEEE Transactions on Network Science and Engineering, 2025.
3. J. Cheng, **D. T. A. Nguyen**, D. T. Nguyen, “*Robust Dynamic Edge Service Placement Under Spatio-Temporal Correlated Demand Uncertainty*”, IEEE Transactions on Services Computing, 2025.
4. **D. T. A. Nguyen**, D. T. Nguyen, A. Nedić, “*Accelerated AB/Push-Pull Methods for Distributed Optimization over Time-Varying Directed Networks*”, IEEE Transactions on Control of Network Systems, 2024.
5. A. Nedić, **D. T. A. Nguyen**, D. T. Nguyen, “*AB/Push-Pull Method for Distributed Optimization in Time-Varying Directed Networks*”, Optimization Methods and Software, 2023.
6. **D. T. A. Nguyen**, Mattia Bianchi, Florian Dörfler, D. T. Nguyen, A. Nedić, “*Nash Equilibrium Seeking Over Row-Stochastic Digraphs With Network Independent Step-sizes*”, IEEE Control Systems Letters and Proceedings of the American Control Conference (ACC), Toronto, 2024. (*Best Student Paper Award Finalist*)
7. J. Cheng, **D. T. A. Nguyen**, D. T. Nguyen, “*Two-Stage Distributionally Robust Edge Node Placement Under Endogenous Demand Uncertainty*”, Proceedings of the IEEE International Conference on Computer Communications INFOCOM, 2024. (Acceptance rate: 256/1307)
8. **D. T. A. Nguyen**, Mattia Bianchi, Florian Dörfler, D. T. Nguyen, A. Nedić, “*Constrained multi-cluster game: Distributed Nash equilibrium seeking over directed graphs*”, Proceedings of the 63rd IEEE Conference on Decision and Control (CDC), Milan, Italy, 2024.
9. **D. T. A. Nguyen\***, J. Cheng\*, N. Trieu, D. T. Nguyen, “*Optimal Workload Allocation for Distributed Edge Clouds With Renewable Energy and Battery Storage*”, Proceedings of the International Conference on Computing, Networking and Communications (ICNC 2024), HI, USA, 2024.
10. **D. T. A. Nguyen**, D. T. Nguyen, A. Nedić, “*Geometric Convergence of Distributed Heavy-Ball Nash Equilibrium Algorithm over Time-Varying Digraphs with Unconstrained Actions*”, IEEE Control Systems Letters and Proceedings of the 62nd IEEE Conference on Decision and Control (CDC), Singapore, 2023.
11. **D. T. A. Nguyen**, J. Cheng, N. Trieu, D. T. Nguyen, “*A Fairness-Aware Attacker-Defender Model for Optimal Edge Network Operation and Protection*”, IEEE Networking Letters, 2023.
12. **D. T. A. Nguyen**, Longfei Li, Hangjie Ji, “*Stable and Accurate Algorithms for Generalized Kirchhoff-Love Plates*”, Journal of Engineering Mathematics, 2021.
13. **D. T. A. Nguyen**, D. T. Nguyen, A. 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.
14. **D. T. A. Nguyen\***, J. Cheng\*, D. T. Nguyen, A. 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, Singapore, 2023. (*Best Paper Award Finalist*)
15. J. Cheng\*, **D. T. A. Nguyen\***, Lele Wang, D. 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)

1. **D. T. A. Nguyen**, Su Wang, D. T. Nguyen, A. Nedić, H. Vincent Poor, “*Decentralized Federated Learning with Gradient Tracking over Time-Varying Directed Networks*”.
2. **D. T. A. Nguyen**, J. Cheng, N. Trieu, D. T. Nguyen, “*A Bilevel Defender-Attacker Model for Enhanced Operational Resilience in Edge Computing*”.
3. J. Cheng, **D. T. A. Nguyen**, N. Trieu, D. T. Nguyen, “*A Distributionally Robust Joint Chance-Constrained Model for Sustainable Data Centers Incorporating Carbon Trading and Water Footprints*”.
4. **D. T. A. Nguyen**, J. Cheng, N. Trieu, D. T. Nguyen, A. Nedić, “*Bi-CrowdCache: A Decentralized Game-Theoretic Model for Edge Content Sharing over Time-varying Communication Networks*”.
5. **D. T. A. Nguyen**, Tarannum Nisha, N. Trieu, D. T. Nguyen, “*A Mixed-Integer Bi-level Model for Joint Optimal Edge Resource Pricing and Service Placement*”.