Daan Rutten

me@daanrutten.com daanrutten.com scholar.google.com

EDUCATION

2020-2024 Ph.D. in Operations Research, Georgia Institute of Technology

2018-2020 M.Sc. in Computer Science (Summa Cum Laude), Eindhoven University of Technology
M.Sc. in Applied Mathematics (Summa Cum Laude), Eindhoven University of Technology

2015-2018 B.Sc. in Applied Physics (Summa Cum Laude), Eindhoven University of Technology
B.Sc. in Applied Mathematics (Summa Cum Laude), Eindhoven University of Technology

EMPLOYMENT

2023 Applied Scientist Intern. *Amazon.com.*

2022 Applied Scientist Intern. *Amazon.com.*

- Worked in the Promise team to optimize the promised delivery date shown to customers.
- Designed and implemented optimization models that perform even with high forecast noise.

2021 Machine Learning Intern. *Applied Materials.*

- Implemented an advanced, numerical simulation to simulate and optimize an AR device.
- Applied advanced optimization to optimize the manufacturing workflow of AR devices.

2016-2022 Software Engineer. *Games for Health Europe*.

- Creator and lead software engineer for Whappbot, a web-based chatbot.

2020-2021 Webmaster. *SNAPP Seminar*.

- Responsible for managing and updating the SNAPP seminar website.

2016-2019 Regional Department Lead. *TopTutors*.

- Responsible for managing the tutoring of more than 200 high-school students by over 40 tutors.

RESEARCH AREAS

- Stochastic processes and random algorithms on graphs
- Online decision making with unreliable machine learning predictions
- Performance analysis of distributed and learning algorithms

SKILLS

- Programming languages: MATLAB, C++, Python, R, SQL, Java.
- Office software: Adobe, Microsoft Office.

PUBLISHED MANUSCRIPTS

- Rutten, D., & Mukherjee, D. (2023). Mean-field Analysis for Load Balancing on Spatial Graphs. *In Abstract Proceedings of the 2023 ACM SIGMETRICS/International Conference on Measurement and Modeling of Computer Systems* (pp. X-Y).
- Rutten, D., Christianson N., Mukherjee D., & Wierman A. (2023). Smoothed Online Optimization with Untrusted Predictions. *In Abstract Proceedings of the 2023 ACM SIGMETRICS/International Conference on Measurement and Modeling of Computer Systems* (pp. X-Y).
- Rutten, D., & Mukherjee, D. (2022). A New Approach to Capacity Scaling Augmented With Unreliable Machine Learning Predictions. *Mathematics of Operations Research*. (link to be announced)
- Rutten, D., & Mukherjee, D. (2022). Load Balancing Under Strict Compatibility Constraints. *Mathematics of Operations Research*. (https://pubsonline.informs.org/doi/abs/10.1287/moor.2022.1258)
- Rutten, D., & Mukherjee, D. (2022). Capacity Scaling Augmented With Unreliable Machine Learning Predictions. *ACM SIGMETRICS Performance Evaluation Review*, *49*(2), 24-26. (https://dl.acm.org/doi/abs/10.1145/3512798.3512808)
- Rutten, D., & Mukherjee, D. (2021). Load Balancing Under Strict Compatibility Constraints. *In Abstract Proceedings of the 2021 ACM SIGMETRICS/International Conference on Measurement and Modeling of Computer Systems* (pp. 51-52). (https://dl.acm.org/doi/abs/10.1145/3410220.3456275)
- Rutten, D., & Sanders, J. (2021). Modeling Rydberg Gases Using Random Sequential Adsorption on Random Graphs. *Physical Review A*, 103(3), 033302. (https://journals.aps.org/pra/abstract/10.1103/PhysRevA.103.033302)

LIST OF GRADUATE-LEVEL COURSES

Operations Research

- Linear Optimization
- Integer Optimization
- Advanced Combinatorial Optimization
- Stochastic Optimization
- Nonlinear Optimization
- Simulation Theory and Methods
- Decision Theory
- Stochastic Decision Theory
- Production and Service Systems Engineering

Computer Science

- Advanced Algorithms
- Geometric Algorithms
- Artificial Intelligence
- Generic Language Technology
- Database Technology
- Program Verification Techniques
- Information Security and Key Management
- Process Algebra

Mathematics

- Stochastic Processes I and II
- Stochastic Calculus I and II
- Stochastic Networks
- Graph Theory
- Random Graphs
- Functional Analysis
- Numerical Analysis
- Scientific Computing

AWARDS AND SCHOLARSHIPS

- INFORMS Junior Faculty Paper Award Finalist (2022).
- Stochastic Networks Student Grant (2022).
- Alice and John Jarvis Ph.D. Student Research Award (2021). $ 500, runner-up.
- ACM SIGMETRICS Student Grant (2021).
- ARC-TRIAD Fellowship (2021). $ 5,000.
- ASML Young Talent Award (2020). € 5,000.
- Stewart Fellowship (2020). $ 10,000.
- Holland Scholarship (2019). € 1,250.

- Young Talent Incentive Prize (2016). € 500.

TEACHING

Spring 2022	Graduate Teaching Assistant for Stochastic Processes II. *Georgia Institute of Technology*.
Spring 2020	Graduate Teaching Assistant for Stochastic Processes 2. *Eindhoven University of Technology*.

MENTORSHIP

- Xie, Y., & Rutten, D. (2022). Improving Multi-armed Bandits with Confidence Estimates. Georgia Institute of Technology.
- KandageDon, U., & Rutten D. (2021). Online Knapsack Problem. SURE REU.

GRANTS

- Assisted on writing and performed preliminary research for Load Balancing for Cloud Networks: Data Locality Issues and Modern Algorithms. NSF organization: CCF. Award amount: $439,202.00.

CONFERENCE AND WORKSHOP PRESENTATIONS

- Mean-field Analysis for Load Balancing on Spatial Graphs (2023). ACM SIGMETRICS, Orlando, United States.
- Smoothed Online Optimization with Untrusted Predictions (2023). ACM SIGMETRICS, Orlando, United States.
- Advances in Online Algorithms with Unreliable Predictions (2022). INFORMS annual meeting, Indianapolis, United States.
- Capacity Scaling Augmented With Unreliable Machine Learning Predictions (2021). INFORMS annual meeting, Anaheim, United States.
- Capacity Scaling Augmented With Unreliable Machine Learning Predictions (2021). Workshop on Mathematical performance Modeling and Analysis, Beijing, China.
- Load Balancing Under Strict Compatibility Constraints (2021). ACM SIGMETRICS, Beijing, China.
- Load Balancing Under Strict Compatibility Constraints (2020). INFORMS annual meeting, Washington, United States.
- Improving Capacity Scaling With Machine Learning Predictions (2020). ISyE student seminar, Atlanta, United States.
- Load Balancing With Job-Server Constraints (2019). Eindhoven University of Technology, Eindhoven, The Netherlands.