Manu Upadhyaya

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Education

Ph.D. in mathematical optimization, Lund University, Sweden **2020–2025**
(GPA: pass/fail only)

M.Sc. in finance, Lund University, Sweden **2018–2020**
(GPA: 87.5% highest possible grade)

M.Sc. and Civ. Ing. in engineering physics, Lund University, Sweden **2014–2020**
(GPA: 5.0/5.0)

Study abroad, University of California, Berkeley, USA **2016–2017**
(GPA: 4.0/4.0)

B.Sc. in mathematics, Lund University, Sweden **2011–2015**
(GPA: 100% highest possible grade)

Research Experience

Postdoctoral Researcher **Feb 2026–Present**
Affiliation: Sierra team, Inria Paris, France.
Affiliation: Center of Applied Mathematics (CMAP), École Polytechnique, France.
Hosts: Adrien Taylor (Inria Paris) and Aymeric Dieuleveut (CMAP, École Polytechnique).
Focus: First-order algorithms for structured optimization and inclusion problems.

PhD Student, Department of Automatic Control, Lund University, Sweden **Jul 2020–Sep 2025**
Advisors: Pontus Giselsson and Sebastian Banert.
Funding: Wallenberg AI, Autonomous Systems and Software Program.
Focus: Lyapunov-type analyses of first-order algorithms for structured optimization and inclusion problems; combined new theory with computer-aided tools to automate analyses, tighten convergence and complexity guarantees, and guide algorithm design.

Visiting Researcher, Sierra team, Inria Paris, France **Sep 2024–Feb 2025**
Host: Adrien Taylor.
Focus: Performance-estimation-based analyses of optimization methods.

Visiting Student Researcher, ETH Zürich, Basel, Switzerland **Jun 2018–Aug 2018**
Supervisor: Ankit Gupta (Mustafa Khammash's research group).
Focus: Stability of stochastic biochemical reaction networks.

Visiting Student Researcher, University of California, Berkeley, USA **May 2017–Aug 2017**
Supervisor: Roberto Calandra (Sergey Levine's research group).
Focus: Tactile sensing for robotic manipulation using deep neural networks; resulted in a paper accepted to CoRL 2017.

Research Assistant, Research Institutes of Sweden, Stockholm, Sweden **Jun 2016–Aug 2016**
Supervisor: Mikael Nygårds.
Focus: Finite element modeling of paperboard container manufacturing in Abaqus.

Professional Experience

Master's Thesis Student, Lynx Asset Management AB, Stockholm, Sweden **Aug 2019–Jan 2020**
Supervisor: Tobias Rydén.
Focus: Designed a data-driven method for covariance matrix regularization tailored for portfolio optimization.
Technologies: Julia, MATLAB.

Quantitative Developer Intern, OQAM AB, Malmö, Sweden **Jun 2019–Jul 2019**

Focus: Contributed to data-driven solutions and workflow automation.
Technologies: Docker, Python, Selenium, SQLAlchemy, Flask, MariaDB, RabbitMQ.

Teaching Experience

Teaching Assistant, Lund University, Sweden

- Network dynamics [2022, 2025]
- Optimization for learning [2020, 2021, 2022, 2023, 2024]
- Modeling and learning from data [2023]
- Deep learning [2021, 2023]
- Project in systems, control, and learning [2021]
- Automatic control, basic course [2020]
- Programming in Java [2015]

Thesis Supervisor, Lund University, Sweden

Supervised master's thesis

- Oscar Gummesson Atroshi and Osman Sibai: *Deep hedging of CVA* [2024].
  Co-supervised with Magnus Wiktorsson (Lund University) and Shengyao Zhu (Nordea Markets).

Publications

Preprints

[P1] Manu Upadhyaya, Adrien B. Taylor, Sebastian Banert, and Pontus Giselsson (2025). AutoLyap: A Python package for computer-assisted Lyapunov analyses for first-order methods. arXiv: 2506.24076 [math.OC]. URL: https://autolyap.github.io.

Conference papers

[C1] Roberto Calandra, Andrew Owens, Manu Upadhyaya, Wenzhen Yuan, Justin Lin, Edward H. Adelson, and Sergey Levine (2017). The feeling of success: Does touch sensing help predict grasp outcomes? *Conference on Robot Learning (CoRL)*.

Journal articles

[J1] Manu Upadhyaya, Puya Latafat, and Pontus Giselsson (2026). A Lyapunov analysis of Korpelevich's extragradient method with fast and flexible extensions. *Mathematical Programming*. DOI: 10.1007/s10107-025-02322-0.

[J2] Sebastian Banert, Manu Upadhyaya, and Pontus Giselsson (2025). The Chambolle–Pock method converges weakly with $\theta > 1/2$ and $\tau\sigma\|L\|^2 < 4/(1+2\theta)$. *Optimization Letters*. DOI: 10.1007/s11590-025-02250-0.

[J3] Manu Upadhyaya, Sebastian Banert, Adrien B. Taylor, and Pontus Giselsson (2025). Automated tight Lyapunov analysis for first-order methods. *Mathematical Programming*. DOI: 10.1007/s10107-024-02061-8.

Theses

[T1] Manu Upadhyaya (2025). Lyapunov analyses for first-order methods: Theory, automation, and algorithm design. PhD thesis. Lund University. URL: https://lup.lub.lu.se/record/a006046c-9dc6-446b-b625-f129587c9674.

[T2] Manu Upadhyaya (2020). Covariance matrix regularization for portfolio selection: Achieving desired risk. Master's thesis. Lund University. URL: http://lup.lub.lu.se/student-papers/record/9005476.

Talks

- 8th International Conference on Continuous Optimization (ICCOPT 2025), Los Angeles, USA. July 2025.
- 22nd Conference on Advances in Continuous Optimization (EUROPT 2025), Southampton, UK. June–July 2025.
- Swedish Control Conference 2025, Lund, Sweden. June 2025.

- Seminar at the Department of Automatic Control, Lund University, Lund, Sweden. March 2025.
- Seminar at Inria Paris, Paris, France. October 2024.
- 33rd European Conference on Operational Research (EURO 2024), Copenhagen, Denmark. June–July 2024.
- 21st Conference on Advances in Continuous Optimization (EUROPT 2024), Lund, Sweden. June 2024.
- 20th Conference on Advances in Continuous Optimization (EUROPT 2023), Budapest, Hungary. August 2023.
- SIAM Conference on Optimization (OP23), Seattle, USA. May–June 2023.
- Seminar at the Department of Automatic Control, Lund University, Lund, Sweden. May 2023.
- SIAM Conference on Computational Science and Engineering (CSE23), Amsterdam, Netherlands. February–March 2023.
- 1st Workshop on Performance Estimation Problems, UCLouvain, Belgium. February 2023.
- Seminar at the Department of Automatic Control, Lund University, Lund, Sweden. June 2022.
- Seminar at the Department of Automatic Control, Lund University, Lund, Sweden. June 2021.

Professional Service

Conference Organization

- Stream organizer for the 22nd Conference on Advances in Continuous Optimization (EUROPT 2025), University of Southampton, Southampton, UK. June 29–July 2, 2025.
- Co-organizer and stream organizer for the 21st Conference on Advances in Continuous Optimization (EUROPT 2024), Lund University, Lund, Sweden. June 26–28, 2024.

Peer Review: Journals

- IEEE Transactions on Automatic Control
- Transactions on Machine Learning Research
- Mathematics of Computation

Peer Review: Conferences

- Learning for Dynamics & Control (L4DC), 2024

Awards and Honors

- **2015 to 2025**: Scholarship awarded by Lund University (ten times).
- **2024, 2025**: The Royal Physiographic Society of Lund Scholarship (twice).
- **2025**: Ericsson Research Foundation Grant.
- **2024**: Skånska Ingenjörsklubbens Stiftelse Scholarship.
- **2018**: Akademiska Föreningens Stipendienämnd Scholarship.
- **2017**: Carl Erik Levins Stiftelse Scholarship (twice).
- **2017**: Gustaf Söderbergs Stiftelse Scholarship.
- **2016**: Civilingenjören Hakon Hanssons Stiftelse Scholarship.
- **2016**: Winner of Accenture IT Case Challenge, Stockholm.

Skills

Programming Languages

- **Proficient:** Python
- **Experience with:** Haskell, Java, Julia, MATLAB, R, Scala, Spark, SQL