




Jakob Nylöf

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INTERESTS

Control Theory, Reinforcement Learning, Stochastic Control, Optimization, Quantum Computing

EDUCATION

KTH Royal Institute of Technology

Stockholm, Sweden

BSc in Engineering Physics & MSc in Mathematics (shared with Stockholm University)

August 2018 - June 2024

- GPA: 4.43/5¹
- Selected master modules: Advanced Real Analysis, Advanced Algebra, Topology, Enumerative Combinatorics, Fourier Analysis, Calculus of Variations, Mathematical Systems Theory, Optimization & Optimal Control Theory, Statistical Mechanics, Advanced Quantum Mechanics
- Master thesis: Q-learning in Continuous Time
Supervisor: Prof. Boualem Djehiche

ETH Zürich

Zürich, Switzerland

Exchange Semester

Feb 2022 - Aug 2022

- Modules: Advanced Quantum Information Theory, Quantum Error Correction, Quantum Information Processing, Computational Quantum Physics, German

Vasaskolan

Gävle, Sweden

Upper Secondary Degree From the Natural Science Programme with Specialization in Mathematics Aug 2015 - Jun 2017

- GPA: 22.3/22.5

ACADEMIC POSITIONS

University of Michigan

Ann Arbor, Michigan, USA

Electrical Engineering and Computer Science Department

Jul - Aug 2023

- Research on minimizing sensor-to-actuator communications for output feedback control leading to publication [1]
- Supervisors: Prof. Necmiye Ozay & Dr. Antoine Aspeel
- Collaborator: Prof. Jing Shuang (Lisa) Li

KTH Royal Institute of Technology

Stockholm, Sweden

Division of Decision and Control Systems

Jun - Oct 2021

- Research on distributed privacy-preserving resource allocation using quantized averaging leading to publication [2]
- Supervisors: Prof. Karl Henrik Johansson, Dr. Apostolos Rikos & Prof. Sebin Gracy

PUBLICATIONS

- [1] Antoine Aspeel, **Jakob Nylöf**, Jing Shuang Li, and Necmiye Ozay. A low-rank approach to minimize sensor-to-actuator communication in finite-horizon output feedback. *IEEE Control Systems Letters*, 7:3609–3614, 2023 ([link](#))
- [2] Apostolos I. Rikos, **Jakob Nylöf**, Sebin Gracy, and Karl H. Johansson. Distributed optimal allocation with quantized communication and privacy-preserving guarantees. *IFAC-PapersOnLine*, 55(41):64–70, 2022. 4th IFAC Workshop on Cyber-Physical and Human Systems CPHS 2022 ([link](#))

¹Grading scale: Excellent (5), Very Good (4), Good (3), Satisfactory (2), Sufficient (1)

AWARDS

- 2021-2022 Ingenjör Ernst Johnsson Scholarship of Academic Excellence (awarded 2 semesters), KTH Royal Institute of Technology
- 2022 Erasmus+ Scholarship, KTH Royal Institute of Technology
- 2017 Ljungbergsfonden Scholarship of Academic Excellence, Vasaskolan
- 2017 Awarded participation in the Sonja Kovalevsky-days for high-school students interested in mathematics
- 2012 Awarded national best science fair project at Internationella Engelska Skolan (topic: Flight of Paper Airplanes)

INDUSTRY EXPERIENCE

Alleima (formerly Sandvik Materials Technology)

Sandviken, Sweden

Internship

Sep - Dec 2017

- Internship at the Department of Transports at Alleima's industrial site.
- Improved water management strategies by studying linear regression models for estimating water reservoir levels.
- Mapped out the positions of industrial vehicles on the industrial site.

Billerud Korsnäs

Gävle, Sweden

Summer Job

Summers 2018 & 2019

- Managed quality control procedures for paper pulp and carton production in a laboratory setting.

ADDITIONAL EXPERIENCE

The REXUS Programme - Rocket Experiments for University Students

Stockholm, Sweden

Bachelor Thesis & Team Member

Jan 2021 - Feb 2022

- Bachelor thesis at KTH: Design of a high altitude glider for returning a free falling module from space back to Earth.
- Member of KTH's REXUS team. Responsible for control and system modelling.

Physics Chapter International Committee

Stockholm, Sweden

Marketing Manager

Aug 2020 - Dec 2020

- Marketing and planning of events for international exchange students at KTH.

Diploma Project From Upper Secondary School

Gävle, Sweden

May - Jun 2017

- Reproduced the Millikan oil-drop experiment in which an estimate of the elementary charge $e = 1.60217663 \times 10^{-19} \text{ C}$ was made.

SKILLS

Courses from Coursera

- Neural Networks and Deep Learning, [certificate](#)
- Unsupervised Learning, Recommenders, Reinforcement Learning, [certificate](#)
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization, [certificate](#)

Computer Skills

Programming: Python (including optimization packages such as cvxpy), Matlab, Bash

Software: Comsol, Simulink, XFLR5, Simscale, CAD, L^AT_EX

Languages: Swedish (native), English (fluent), French (intermediate), German (beginner)

OTHER ACTIVITIES

- I've helped organize the reception of new students KTH.
- I've been a scout-leader and organized hikes and weekly meetings for other scouts.
- In my free time, I play electric guitar and really enjoy outdoor activities such as hiking and skiing.

REFEREES

Prof. Necmyie Ozay

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South Dakota Mines

Rapid City, South Dakota, USA

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