



Robert Mattila

Ph.D. Student | KTH Royal Institute of Technology

Profile

Currently a Ph.D. student whose research concerns identification, control and inference in stochastic dynamical systems. Interested in machine learning, data analytics and their future applications in real world scenarios – for example, in next-generation health-care.

Some of the skills that I have picked up during my Ph.D. studies are: • independent research and problem solving, • teaching and presenting for an audience, • written communication, • time-management, • critical thinking, • algorithm implementation and evaluation.

Publications (selected)

- Robert Mattila, Cristian R. Rojas, Vikram Krishnamurthy, and Bo Wahlberg. Inverse filtering for hidden Markov models. In *Advances in Neural Information Processing Systems 30 (NIPS'17)*, pages 4207–4216, 2017.
- Robert Mattila, Cristian R. Rojas, Vikram Krishnamurthy, and Bo Wahlberg. Asymptotically efficient identification of known-sensor hidden Markov models. *IEEE Signal processing letters*, 24(12):1813–1817, 2017.
- Antti Siika, Robert Mattila, Bo Wahlberg, and Joy Roy. An optimal gender-specific treatment policy for abdominal aortic aneurysms constructed using a Markov decision process model. *Journal of Vascular Surgery*, 65(6, Supplement):175S, 2017. Abstracts of the 2017 Vascular Annual Meeting (VAM'17).

Education and research

2018	Licentiate Degree <i>Hidden Markov models: Identification, control and inverse filtering</i> Opponent: Prof. Eric Moulines	KTH, Stockholm
2017	Visiting researcher Supervisor: Prof. Vikram Krishnamurthy	Cornell Tech, Manhattan
2015 - Now	Ph.D. Student Supervisors: Prof. Bo Wahlberg, Assoc. Prof. Cristian Rojas Courses: • Partially observed Markov decision processes • Game theory • Mathematical methods in signals, systems and control • Bayesian networks • Hybrid systems • Probabilistic verification and synthesis • Matrix algebra • Probability and random processes • Convex optimization • Stochastic control and optimization • Deep learning in data science (attended lectures)	KTH, Stockholm
2014	Research internship Supervisors: Prof. Richard Murray, Asst. Prof. Yilin Mo	Caltech, California
2013 - 2014	M.Sc. in Systems, Control and Robotics GPA 5.0/5.0	KTH, Stockholm
2013	Erasmus exchange studies GPA 8.1/10.0 (Courses in Spanish)	UCM, Madrid
2010 - 2013	B.Sc. in Engineering Physics GPA 5.0/5.0	KTH, Stockholm

Teaching

I have taught/supervised: • Stochastic control and optimization (M.Sc. level) • Bachelor theses (inverse Markowitz portfolio selection) • Master thesis (optimal input design) • Automatic control (B.Sc. level, twice) • Project course in electrical engineering (B.Sc. level).

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Online

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 rmattila

www: rmattila.github.io

Languages

Swedish ★★★★★
English ★★★★★
Spanish ★★★☆☆

Programming

- Matlab, Python, Julia
- Algorithm implementation
- **kibok.se** (Django)

Math

- Hidden Markov models
- Statistics, machine learning, optimization

Computers

- OSX, Linux, Windows
- \LaTeX , Git

Awards

- KTH-EE Scholarship of Excellence (1 MSEK)
- H. Göransson's Scholarship for outstanding grades
- KTH Student Scholarship for outstanding grades