RobertMattila

Ph.D. Student | KTH Royal Institue of Technology

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Online
robertmattila
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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

Profile

I am a Ph.D. student whose research concerns identification, control and inference in stochastic dynamical systems. My interests are 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)

- R. Mattila, C. Rojas, V. Krishnamurthy & B. Wahlberg. Inverse filtering for linear Gaussian state-space models. In *the IEEE Conference on Decision and Control* (CDC'18).
- R. Mattila, C. Rojas, V. Krishnamurthy & B. Wahlberg. Inverse filtering for hidden Markov models. In *Advances in Neural Information Processing Systems 30* (**NIPS'17**).
- R. Mattila, C. Rojas, V. Krishnamurthy & B. Wahlberg. Asymptotically efficient identification of known-sensor hidden Markov models. *IEEE Signal Processing Letters*, 2017.
- A. Siika, R. Mattila, B. Wahlberg & J. Roy. An optimal gender-specific treatment policy for abdominal aortic aneurysms constructed using a Markov decision process model. *Journal of Vascular Surgery*. Abstracts of the Vascular Annual Meeting (VAM'17).

Education and research

2018 **Licentiate Degree** — KTH, Stockholm
Title: *Hidden Markov models: Identification, control and inverse filtering*
Opponent: Prof. Eric Moulines

2017 **Visiting Researcher** — Cornell Tech, Manhattan
Supervisor: Prof. Vikram Krishnamurthy

2015 - Now **Ph.D. Student** — KTH, Stockholm
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)

2014 **Research Internship** — Caltech, California
Supervisors: Prof. Richard Murray, Asst. Prof. Yilin Mo

2013 **Erasmus Exchange Studies** — UCM, Madrid
GPA: 8.1/10.0 (Courses taught in Spanish)

2010 - 2015 **Master of Science in Engineering (C.I. Teknisk Fysik)** — KTH, Stockholm
(**B.Sc.** *Engineering Physics* **M.Sc.** *Systems, Control and Robotics*)
GPA: 5.0/5.0

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).

(August 7, 2018)