Address

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Contact

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Online

in robertmattila
⌂ 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

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) • Optimal filtering (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: • Reinforcement learning (M.Sc. level, 120 students) • Stochastic control and optimization (M.Sc. level) • Bachelor and master's theses (inverse Markowitz portfolio selection, optimal input design) • Automatic control • Project course in electrical engineering.