

Daniel Gedon

Uppsala, November 2023

Personal Data

University Address: Uppsala University
Department of Information Technology
SE-751 05 Uppsala, Sweden

E-Mail: daniel.gedon@it.uu.se
Website: dgedon.github.io
GitHub: github.com/dgedon
Twitter / X: @danigedon
LinkedIn: linkedin.com/in/dgedon/

Birth: 11.05.1994 in Feuchtwangen, Germany
Citizenship: German

Education

Ph.D. Student 08/2019 - expected 07/2024

Uppsala University, Sweden
Division of Systems and Control, Department of Information Technology
Advisor: Thomas Schön
Fully funded by Wallenberg AI, Autonomous Systems and Software Project (WASP)

M.Sc. in System and Control 09/2017 - 07/2019

TU Delft, the Netherlands.
Thesis: *Tensor Network Kalman Filter for Large-Scale MIMO Systems*
Advisor: Michel Verhaegen

B.Eng. in Aerospace Engineering 09/2012 - 09/2015

Baden-Württemberg Corporate State University, Germany.
Thesis title: *Mission Based Cross Validation of the ESA Pointing Error Engineering Tool (PEET)*
Advisor: Thomas Ott
Cooperation with Airbus Defence & Space, Friedrichshafen (Germany).

Teaching

Lecturer 09/2023 - Present

Uppsala University, Sweden
Advanced Probabilistic Machine Learning, 1RT705/1RT003, MSc level [Syllabus] Fall 2023

Teaching Assistant 10/2018 - Present

Uppsala University, Sweden
Statistical Machine Learning, 1RT700, MSc level [Syllabus] Fall 2023
Advanced Probabilistic Machine Learning, 1RT705/1RT003, MSc level [Syllabus] Fall 2023
Empirical Modelling & System Identification, 1RT890/1RT885, MSc level [Syllabus] Fall 2023
Artificial Intelligence and Machine Learning, WASP Graduate School, PhD level Spring 2023
Statistical Machine Learning, 1RT700, MSc level [Syllabus] Fall 2022

Advanced Probabilistic Machine Learning, 1RT705/1RT003, MSc level [Syllabus]	Fall 2022
Artificial Intelligence and Machine Learning, WASP Graduate School, PhD level [Syllabus]	Spring 2022
Statistical Machine Learning, 1RT700, MSc level [Syllabus]	Spring 2022
Statistical Machine Learning, 1RT700, MSc level [Syllabus]	Fall 2021
Automatic Control II, 1RT495, MSc level [Syllabus]	Fall 2021
Introduction to Computer Controlled Systems, 1RT485, BSc level [Syllabus]	Spring 2021
System Identification, 1RT885, MSc level [Syllabus]	Spring 2020
Introduction to Computer Controlled Systems, 1RT485, BSc level [Syllabus]	Spring 2020
TU Delft, The Netherlands	
Filtering and Identification, SC42025, MSc level [Syllabus]	Fall 2018

Publications

* equal contribution.

Pre-prints and submitted manuscripts

- M1. **DG**, Amirhesam Abedsoltan, Thomas B. Schön, Mikhail Belkin, **Uncertainty Estimation with Recursive Feature Machines**, *Submitted to AISTATS24*, 2024.
- M2. Gianluigi Pillonetto, Aleksandr Aravkin, **DG**, Lennart Ljung, Antônio H. Ribeiro, Thomas B. Schön, **Deep networks for system identification: a Survey**, *arXiv:2301.12832*, provisionally accepted at Automatica, 2023 (DOI pending). [arXiv]
- M3. **DG**, Antônio H. Ribeiro, Thomas B. Schön, **No Double Descent in PCA: Training and Pre-Training in High Dimensions**, *OpenReview:ieWqvOiKgZ2*, 2022. [OpenReview]
- M4. Philipp Von Bachmann, **DG**, Fredrik K. Gustafsson, Antônio H. Ribeiro, Erik Lampa, Stefan Gustafsson, Johan Sundström, Thomas B. Schön, **ECG-Based Electrolyte Prediction: Evaluating Regression and Probabilistic Methods**, *arXiv:2212.13890*, 2022. [arXiv]

Peer-reviewed publications

- P1. **DG**, Amirhesam Abedsoltan, Thomas B. Schön, Mikhail Belkin, **On Feature Learning of Recursive Feature Machines and Automatic Relevance Determination**, *UniReps: the First Workshop on Unifying Representations in Neural Models Workshop at NeurIPS*, 2023. [NeurIPS23] [OpenReview]
- P2. Theogene Habineza, Antônio H. Ribeiro, **DG**, Joachim A. Behar, Antonio Luiz P. Ribeiro, Thomas B. Schön, **End-to-end Risk Prediction of Atrial Fibrillation from the 12-Lead ECG by Deep Neural Networks**, *Journal of Electrocardiology*, 2023. [DOI] [arXiv] [code] [models]
- P3. Carl Jidling, **DG**, Thomas B. Schön, Claudia Di Lorenzo Oliveira, Clareci Silva Cardoso, Ariela Mota Ferreira, Luana Giatti, Sandhi Maria Barreto, Ester C. Sabino, Antonio L. P. Ribeiro, Antônio H. Ribeiro, **Screening for Chagas disease from the electrocardiogram using a deep neural network**, *PLOS Neglected Tropical Diseases*, 2023. [DOI] [medRxiv] [code] [models]
- P4. **DG**, Antônio H. Ribeiro, Niklas Wahlström, Thomas B. Schön, **Invertible Kernel PCA with Random Fourier Features**, *IEEE Signal Processing Letters*, 2023. [DOI] [arXiv] [code]
- P5. Stefan Gustafsson*, **DG***, Erik Lampa, Antônio H. Ribeiro, Martin J. Holzmann, Thomas B. Schön, Johan Sundström, **Development and validation of deep learning ECG-based prediction of myocardial infarction in emergency department patients**, *Scientific Reports* 12, 19615, 2022. [DOI]
- P6. **DG***, Stefan Gustafsson*, Erik Lampa, Antônio H. Ribeiro, Martin J. Holzmann, Thomas B. Schön, Johan Sundström, **ResNet-based ECG Diagnosis of Myocardial Infarction in the Emergency Department**, *Machine learning from ground truth: New medical imaging datasets for unsolved medical problems Workshop at NeurIPS*, 2021, Online. (Spotlight talk) [Paper] [Slides]

- P7. **DG**, Antônio H. Ribeiro, Niklas Wahlström, Thomas B. Schön, **First Steps Towards Self-Supervised Pretraining of the 12-Lead ECG**, *Computing in Cardiology (CinC)*, 2021, online. [DOI] [Slides] [Video]
- P8. **DG**, Niklas Wahlström, Thomas B. Schön, Lennart Ljung, **Deep State Space Models for Non-linear System Identification**, *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, 2021, online. [DOI] [arXiv] [Code] [Slides]
- P9. Antônio H. Ribeiro, **DG**, Daniel Martins Teixeira, Manoel H. Ribeiro, Antonio L. Pinho Ribeiro, Thomas B. Schön, Wagner Meira Jr., **Automatic 12-lead ECG classification using a convolutional network ensemble**, *Computing in Cardiology (CinC)*, 2020, Online. [DOI] [Code] [Slides]
- P10. **DG**, Pieter Piscaer, Kim Batselier, Carlas Smith and Michel Verhaegen, **Tensor Network Kalman Filter for LTI Systems**, *27th European Signal Processing Conference (EUSIPCO)*, A Coruña, Spain, 2019. [DOI] [Code] [Slides]
- P11. **DG**, **Tensor Network Kalman Filter for Large-Scale MIMO Systems: With Application to Adaptive Optics**, *Master Thesis*, TU Delft, The Netherlands, 2019. [Thesis] [Slides]
- P12. Thomas Ott, Marc Hirth, Massimo Casasco, Simon Görries, **DG**, Alison Ponche, **PointingSat – High Precision Pointing Error Analysis with ESA PEET v1.0**, *10th International ESA Conference on Guidance, Navigation & Control Systems*, Salzburg, Austria, 2017. [Paper]

Invited Talks

- | | |
|---|----------------|
| 1. ERNSI Workshop, Stockholm.
<i>Deep Networks for System Identification: A Survey</i> | September 2023 |
| 2. Belkin Lab Group Meeting, San Diego.
<i>No double descent in PCA: Training and pre-training in high dimensions</i> | March 2023 |
| 3. SciLifeLab DDLS annual conference, Stockholm.
Panel discussion: <i>Training in Data Driven Life Science</i> | November 2022 |
| 4. Joint DSBS / FMS Meeting, Malmö.
<i>Deep Learning-based ECG Reading in the Emergency Department - Diagnosis of Myocardial Infarctions</i> | November 2022 |
| 5. NeurIPS Workshop Machine learning from ground truth: New medical imaging datasets for unsolved medical problems, online.
<i>ResNet-based ECG Diagnosis of Myocardial Infarction in the Emergency Department</i> | December 2021 |
| 6. Computing in Cardiology (CinC), online.
<i>First Steps Towards Self-Supervised Pretraining of the 12-Lead ECG</i> | September 2021 |
| 7. 19th IFAC Symposium on System Identification (SYSID), online.
<i>Deep State Space Models for Nonlinear System Identification</i> | July 2021 |
| 8. 27th European Signal Processing Conference (EUSIPCO), A Coruña.
<i>Tensor Network Kalman Filter for LTI Systems</i> | September 2019 |

Supervision

- | | |
|---|-------------|
| Philipp von Bachmann, MSc student project | Spring 2022 |
| Theogene Habineza, MSc thesis project | Spring 2022 |

Longer scientific visits

Visiting Ph.D. Student with UC San Diego (3 months). Host: Mikhail Belkin.

Spring 2023

Industrial Positions

Satellite Attitude and Orbit Control System Analyst

10/2015 - 09/2016

Airbus Defence and Space, Friedrichshafen, Germany

Personal Experience

Solo Travel

10/2016 - 04/2017

Long distance hike alone in Patagonia [Greater Patagonian Trail].
Backpacking, discovering the unknown, stretching own boundaries.
Language school: Spanish (Sucre, Bolivia).

Voluntary Work

04/2017 - 08/2017

Ansbach, Germany.
Work with primary school children, elderly and refugees.

Pedagogical Education

Academic teacher training course, Uppsala University, 7.5 credits, 2022, [Syllabus]

Languages

German (mother tongue)

English (fluent)

Swedish (intermediate knowledge)

Spanish (beginner)