

# Daniel Gedon

Uppsala, November 2023

## Personal Data

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LinkedIn: linkedin.com/in/dgedon/

Birth: 11.05.1994 in Feuchtwangen, Germany  
Citizenship: German

## Education

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**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

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**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
<b>TU Delft, The Netherlands</b>	
Filtering and Identification, SC42025, MSc level [Syllabus]	Fall 2018

## Publications

\* equal contribution.

### Pre-prints and submitted manuscripts

1. **DG**, Amirhesam Abedsoltan, Thomas B. Schön, Mikhail Belkin, **Uncertainty Estimation with Recursive Feature Machines**, *Submitted*, 2023.
2. 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. [arXiv]
3. **DG**, Antônio H. Ribeiro, Thomas B. Schön, **No Double Descent in PCA: Training and Pre-Training in High Dimensions**, *OpenReview:ieWqvOiKgZ2*, 2022. [OpenReview]
4. 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

1. **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. [OpenReview]
2. 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]
3. 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]
4. **DG**, Antônio H. Ribeiro, Niklas Wahlström, Thomas B. Schön, **Invertible Kernel PCA with Random Fourier Features**, *IEEE Signal Processing Letters*, 2023. [doi] [arXiv] [code]
5. Stefan Gustafsson\*, **DG**\*, Erik Lampa, Antônio H. Ribeiro, Martin J. Holzmänn, 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]
6. **DG**\*, Stefan Gustafsson\*, Erik Lampa, Antônio H. Ribeiro, Martin J. Holzmänn, 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]

7. **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]
8. **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]
9. 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]
10. **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]
11. **DG**, **Tensor Network Kalman Filter for Large-Scale MIMO Systems: With Application to Adaptive Optics**, *Master Thesis*, TU Delft, The Netherlands, 2019. [Thesis] [Slides]
12. 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

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

## Supervision

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

## Longer scientific visits

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

Spring 2023

## Industrial Positions

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### Satellite Attitude and Orbit Control System Analyst

10/2015 - 09/2016

Airbus Defence and Space, Friedrichshafen, Germany

## Personal Experience

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### 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

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

## Languages

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German (mother tongue)  
English (fluent)  
Swedish (intermediate knowledge)  
Spanish (beginner)