Daniel Gedon

Uppsala, September 2023

Personal Data

University Address:	Uppsala University Department of Information Technology SE–751 05 Uppsala, Sweden
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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 Leanring, 1RT705/1RT003, MSc level [Syllabus] Fall 2023

Teaching Assistant 10/2018 - Present

Uppsala University, Sweden

Advanced Probabilistic Machine Leanring, 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

1. 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]

2. **DG**, Antônio H. Ribeiro, Thomas B. Schön, **No Double Descent in PCA: Training and Pre-Training in High Dimensions**, *OpenReview:ieWqvOiKgz2*, 2022. [OpenReview]

3. 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. 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]

2. 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]

3. **DG**, Antônio H. Ribeiro, Niklas Wahlström, Thomas B. Schön, **Invertible Kernel PCA with Random Fourier Features**, *IEEE Signal Processing Letters*, 2023. [doi] [arXiv] [code]

4. 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]

5. **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]

6. **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]

7. **DG**, Niklas Wahlström, Thomas B. Schön, Lennart Ljung, **Deep State Space Models for Nonlinear System Identification**, *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, 2021, online. [doi] [arXiv] [Code] [Slides]

8. 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]

9. **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]

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

11. 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. September 2023
   Deep Networks for System Identification: A Survey

2. Belkin Lab Group Meeting, San Diego. March 2023
   No double descent in PCA: Training and pre-training in high dimensions

3. SciLifeLab DDLS annual conference, Stockholm. November 2022
   Panel discussion: *Training in Data Driven Life Science*

4. Joint DSBS / FMS Meeting, Malmö. November 2022
   Deep Learning-based ECG Reading in the Emergency Department - Diagnosis of Myocardial Infarctions

5. NeurIPS Workshop Machine learning from ground truth: New medical imaging datasets for unsolved medical problems, online. December 2021
   ResNet-based ECG Diagnosis of Myocardial Infarction in the Emergency Department

6. Computing in Cardiology (CinC), online. September 2021
   First Steps Towards Self-Supervised Pretraining of the 12-Lead ECG

7. 19th IFAC Symposium on System Identification (SYSID), online. July 2021
   Deep State Space Models for Nonlinear System Identification

8. 27th European Signal Processing Conference (EUSIPCO), A Coruña. September 2019
   Tensor Network Kalman Filter for LTI Systems

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)