Fredrik K. Gustafsson

PHD STUDENT · UPPSALA UNIVERSITY

Docentgatan 7 Lgh 1004, 752 57 Uppsala, Sweden

+46705786348 | fregu856@gmail.com | fregu856.com | fregu856 | fregu856

Education

Uppsala University
Doctor of Philosophy (PhD), Electrical Engineering
2018 - 2023 (expected)

Linköping University
Master of Science (MSc), Electrical Engineering
2016 - 2018

Stanford University
Graduate Exchange Student, Electrical Engineering
2016 - 2017

Linköping University
Bachelor of Science (BSc), Applied Physics and Electrical Engineering
2013 - 2016

Professional Experience

PhD Student — *Uppsala, Sweden*
Uppsala University, Department of Information Technology — *Oct. 2018 - present*
- Supervisors: Thomas Schön & Martin Danelljan.

Contingent Worker — *Remote*
Facebook Reality Labs, FRL Research Pittsburgh — *Sep. 2021 - Dec 2021*
- Part-time internship extension.

Research Intern — *Remote*
Facebook Reality Labs, FRL Research Pittsburgh — *Jun. 2021 - Sep. 2021*
- 3D human pose estimation, working with Weipeng Xu (remote due to COVID-19).

Software Engineer — *Munich, Germany*
BMW Group — *Aug. 2018*
- Feature development for autonomous driving and advanced driver assistance systems.

Master's Thesis Student — *Gothenburg, Sweden*
Zenuity — *Jan. 2018 - Jun. 2018*
- 3D detection of vehicles in LiDAR and/or image data, using deep learning.

Summer Intern — *Gothenburg, Sweden*
Zenuity — *Jun. 2017 - Aug. 2017*
- Developed a deep learning demo/test platform based on a standard 1/10 scale RC car.

Summer Intern — *Trollhättan, Sweden*
T Engineering — *Jun. 2016 - Aug. 2016*
- Developed a web tool for visualization of car engine sensor data for a fleet of test vehicles.

Teaching Assistant — *Linköping, Sweden*
Linköping University, Department of Mathematics — *Aug. 2014 - Dec. 2015*

Publications

Refusion: Enabling Large-Size Realistic Image Restoration with Latent-Space Diffusion Models
Ziwei Luo, <u>Fredrik K. Gustafsson</u>, Zheng Zhao, Jens Sjölund, Thomas B. Schön
The IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshops), 2023

How Reliable is Your Regression Model's Uncertainty Under Real-World Distribution Shifts?
<u>Fredrik K. Gustafsson</u>, Martin Danelljan, Thomas B. Schön
Preprint, 2023

Image Restoration with Mean-Reverting Stochastic Differential Equations
Ziwei Luo, <u>Fredrik K. Gustafsson</u>, Zheng Zhao, Jens Sjölund, Thomas B. Schön
Preprint, 2023

ECG-Based Electrolyte Prediction: Evaluating Regression and Probabilistic Methods
Philipp Von Bachmann, Daniel Gedon, <u>Fredrik K. Gustafsson</u>, Antônio H. Ribeiro, Erik Lampa, Stefan Gustafsson, Johan Sundström, Thomas B. Schön
Preprint, 2022

Learning Proposals for Practical Energy-Based Regression
<u>Fredrik K. Gustafsson</u>, Martin Danelljan, Thomas B. Schön
The International Conference on Artificial Intelligence and Statistics (AISTATS), 2022

Uncertainty-Aware Body Composition Analysis with Deep Regression Ensembles on UK Biobank MRI
Taro Langner, <u>Fredrik K. Gustafsson</u>, Benny Avelin, Robin Strand, Håkan Ahlström, Joel Kullberg
Computerized Medical Imaging and Graphics, 2021

Deep Energy-Based NARX Models
Johannes Hendriks, <u>Fredrik K. Gustafsson</u>, Antônio Ribeiro, Adrian Wills, Thomas B. Schön
The 19th IFAC Symposium on System Identification (SYSID), 2021

Accurate 3D Object Detection using Energy-Based Models
<u>Fredrik K. Gustafsson</u>, Martin Danelljan, Thomas B. Schön
The IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshops), 2021

How to Train Your Energy-Based Model for Regression
<u>Fredrik K. Gustafsson</u>, Martin Danelljan, Radu Timofte, Thomas B. Schön
The British Machine Vision Conference (BMVC), 2020

Energy-Based Models for Deep Probabilistic Regression
<u>Fredrik K. Gustafsson</u>, Martin Danelljan, Goutam Bhat, Thomas B. Schön
The European Conference on Computer Vision (ECCV), 2020

Evaluating Scalable Bayesian Deep Learning Methods for Robust Computer Vision
<u>Fredrik K. Gustafsson</u>, Martin Danelljan, Thomas B. Schön
The IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshops), 2020

Automotive 3D Object Detection Without Target Domain Annotations
<u>Fredrik K. Gustafsson</u>, Erik Linder-Norén
Master of Science Thesis in Electrical Engineering, Linköping University, 2018

Teaching Experience

Uppsala University

Spr. 2023	**1RT495 Automatic Control II (MSc)**, Teaching Assistant	*(problem-solving sessions, grading)*
Aut. 2022	**1RT700 Statistical Machine Learning (MSc)**, Teaching Assistant	*(problem-solving sessions, grading)*
Aut. 2022	**1RT890 Empirical Modelling (MSc)**, Teaching Assistant	*(problem-solving sessions, labs, grading)*
Spr. 2022	**1RT700 Statistical Machine Learning (MSc)**, Teaching Assistant	*(problem-solving sessions, grading)*
Aut. 2021	**1RT890 Empirical Modelling (MSc)**, Teaching Assistant	*(problem-solving sessions, grading)*
Spr. 2021	**1RT495 Automatic Control II (MSc)**, Teaching Assistant	*(computer labs, labs)*
Spr. 2021	**1RT490 Automatic Control I (BSc)**, Teaching Assistant	*(problem-solving sessions, grading)*

Aut. 2020	**1RT890 Empirical Modelling (MSc)**, Teaching Assistant *(problem-solving sessions, grading)*
Spr. 2020	**1RT700 Statistical Machine Learning (MSc)**, Lab Assistant
Spr. 2020	**1RT490 Automatic Control I (BSc)**, Teaching Assistant *(problem-solving sessions, grading)*
Aut. 2019	**1RT490 Automatic Control I (BSc)**, Teaching Assistant *(problem-solving sessions, grading)*
Spr. 2019	**Deep Learning (PhD)**, Teaching Assistant *(help desks, grading)*
Spr. 2019	**1RT700 Statistical Machine Learning (MSc)**, Lab Assistant
Spr. 2019	**1RT490 Automatic Control I (BSc)**, Teaching Assistant *(problem-solving sessions, grading)*

Linköping University

Aut. 2015	**TATA24 Linear Algebra (BSc)**, Teaching Assistant *(mentor sessions)*
Aut. 2015	**TATM79 Found. Course in Mathematics (BSc)**, Teaching Assistant *(supervisor sessions, grading)*
Aut. 2014	**TATA24 Linear Algebra (BSc)**, Teaching Assistant *(mentor sessions)*
Aut. 2014	**TAIU10 Calculus One Variable, Prep. Course (BSc)**, Teaching Assistant *(problem-solving sessions)*

Academic Service

Reviewing

NeurIPS 2023, Upcoming

BMVC 2023, Upcoming

ICCV 2023, Upcoming

AISTATS 2023, 3 Papers

AAAI 2023, 3 + 4 Papers

BMVC 2022, 6 Papers

ECCV 2022, 8 Papers

CVPR 2022, 2 Papers

AISTATS 2022, 3 Papers

AAAI 2022, 4 + 2 Papers

BMVC 2021, 6 Papers

EBM Workshop at ICLR 2021, 3 Papers

ICRA 2021, 1 Paper

BMVC 2020, 1 Paper

IFAC World Congress 2020, 2 Papers

Invited Talks

Accurate 3D Object Detection using Energy-Based Models, Zenseact, *Gothenburg, Sweden (Online)*, 2021.

Evaluating Scalable Bayesian Deep Learning Methods for Robust Computer Vision, Zenuity, *Gothenburg, Sweden*, 2019.

Awards

The Tryggve Holm medal for *"outstanding student achievements"* at Linköping University, 2018.

Languages

Swedish (native), English (fluent).