# Elke Schlager

*MSc, PhD Student*

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*Atmospheric Emissions & Modelling*
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## Profile

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| Birth | 9th of August 1993, Austria |
| Citizenship | Austrian |
| About | PhD student in Climate Modelling with experience in Data Science and Machine Learning. Master of Science in mathematics. Passionate about learning something new. Open, communicative and reliable team player. |

## Proficiency

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| Programming | Python |
| Data Analysis Libraries | numpy, scipy, pandas, seaborn |
| ML Libraries | scikit-learn, pytorch, keras |
| Tools | Jupyter, GitLab, PyCharm, CDO, LaTeX |
| Others | InfluxDB, Matlab, touch-typing method, MS Office |
| Languages | German (native)<br>English (fluent) |

## Education

Since 12/2023 **PhD Studies in Climate Science**, *Aarhus University, Danish Meteorological Institute, Geological Survey of Denmark and Greenland (Denmark)*,
Developing machine learning tools for producing an ensemble of medium- to long-term projections for Greenland ice sheet runoff under a range of future scenarios.

Completed courses:

- Course *Atmospheric Measurement Methods: in situ* (University of Graz, Austria)
- Course *Climate Dynamics* (University of Graz, Austria)
- *Glaciology in Machine Learning Summer School* (University of Montana, USA)
- Summer school *Climate Change - Cross-disciplinary Challenges and Solutions* (Aarhus University, Denmark)
- Course *Science Teaching* (Aarhus University, Denmark)

2015-2018 **Postgraduate Studies in Mathematics**, *University of Graz and Graz University of Technology (Austria)*, Individual Curriculum: *Mathematics for Biomechanical Applications*, completed degree *Diplom-Ingenieur (Master of Science)* with Distinction.
Master thesis in cooperation with VIRTUAL VEHICLE Research Center Graz: *Parametrisation of a 3D Battery Model via FE-Method Using Sensitivity Analysis in Comparison to the Equivalent Circuit Model* [`https://api.semanticscholar.org/CorpusID:228456052`]

2011-2015 **Undergraduate Studies in Mathematics**, *University of Graz and Graz University of Technology (Austria)*, completed degree *Bachelor of Science* with Distinction.
Bachelor thesis: *Asymptotic Behaviour of the Eigenvalues and Solutions of the Sturm Liouville Eigenvalue Problem*

## Experience

2024 **Teaching Duties during PhD**, *Aarhus University*, Roskilde, Denmark.
- Python Beginner Course
- Workshop on Machine Learning for Climate Downscaling

04/2019-12/2023 **Data Scientist**, *Know-Center GmbH*, Graz, Austria,
Working in industrial and scientific projects in different domains.
- Implementation of Explainable AI methods on regression of in-situ measurements from Greenland. (see `https://weg-re.at`)
- Missing value imputation on Sentinel-2 NDVI data.
- Implementation of U-Net for seamless weather prediction based on ECMWF and INCA data.
- Data analysis of terrestrial laser scan data and research on tree competition parameters for forest modelling in terms of climate change. (see `https://ai4trees-project.at`)
- Literature research, design, implementation, and dissemination of prediction pipeline for semantic image segmentation for wear detection on drilling tool images using U-Net and overlap-tile strategy for seamless predictions of high resolution images. (see `https://github.com/eschlager/UNet-Drilling` and list of publications below)
- Literature research, data acquisition, and development of soft sensors via regression models for estimating solar irradiance and perceived comfort in office rooms. (see `http://comfort.know-center.tugraz.at` and list of publications below)
- In-depth data exploration and data analysis for a variety of building sensor and simulation data from building energy simulations and CFD simulations.
- Design and implementation of customized automated data delivery check from a variety of sources for monitoring sensor data fed into InfluxDB using Docker.

07-09/2016 **Intern**, *Virtual Vehicle Research GmbH*, Graz, Austria,
Assisted research in modelling Lithium-ion cells with equivalent circuit models.

10/2014-07/2015 **Tutor**, *University of Graz*, Austria,
Assisted teaching for *Linear Algebra I* and *Introduction to Algebra*.

## Publications

### Peer Reviewed Journal Articles

2023 Elke Schlager, Gerald Feichtinger, and Heimo Gursch. Development and comparison of local solar split models on the example of central europe. *Energy and AI*, volume 12, 2023. DOI: 10.1016/j.egyai.2022.100226.

2023 H. Edtmayer, D. Brandl, T. Mach, E. Schlager, H. Gursch, M. Lugmair, and C. Hochenauer. Modelling virtual sensors for real-time indoor comfort control. *Journal of Building Engineering*, 2023. DOI:10.1016/j.jobe.2023.106040.

### In Conference Proceedings

2023 Anika Terbuch, Paul O'Leary, Dimitar Ninevski, Elias Jan Hagendorfer, Elke Schlager, Andreas Windisch, and Christoph Schweimer. A rayleigh-ritz autoencoder. In *2023 IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*, pages 1–6. IEEE, 2023.

2020 Heimo Gursch, Elke Schlager, Gerald Feichtinger, and Daniel Brandl. Soft sensors for perceived human comfort in office rooms based on a combination of building simulations and data-driven modelling. In Hildegard Gremmel-Simon, editor, *e.nova International Conference*, volume 22, pages 271–278, Austria, 2020. Leykam Buchverlagsgesellschaft. `https://www.fh-burgenland.at/fileadmin/user_upload/Termine/enova/2020/Tagungsband_enova2020.pdf`.

2020 Gerald Feichtinger, Heimo Gursch, Elke Schlager, Daniel Brandl, and Markus Gratzl. Comfort—data-driven analysis and simulations of human comfort in office rooms. In Udo Bachhiesl, editor, *16. Symposium Energieinnovation - EnInnov 2020*, pages 416–417. Verlag der Technischen Universität Graz, 2020. DOI: 10.3217/978-3-85125-734-2.

### Poster Presentations at Conferences

10/2024 NCKF Climate Research Symposium, Copenhagen, Denmark

05/2024 Super-Resolution and Downscaling for EO and Earth Science, ESA-ESRIN, Frascati, Italy

01/2024 ISAC Network on Arctic Glaciology Workshop, Obergurgl, Austria