

MAXIMILIAN PIERZYNA

Rotterdam, The Netherlands
m.pierzyna@tudelft.nl, maximilian-pierzyna.de

*Passionate about solving physical problems with data-driven methods.
Currently developing machine learning models of atmospheric turbulence.*

EDUCATION

Delft University of Technology PhD Student, expected graduation 2026-08	2022-08 – ongoing Delft, The Netherlands
Technical University of Braunschweig Aerospace Engineering, Master of Science (with honours)	2019-10 – 2022-07 Braunschweig, Germany
KTH Royal Institute of Technology Aerospace Engineering, Erasmus+ Exchange	2020-08 – 2021-01 Stockholm, Sweden
Technical University of Braunschweig Mechanical Engineering, Bachelor of Science	2015-10 – 2019-09 Braunschweig, Germany

PUBLICATIONS

- [5] M. Pierzyna, S. Basu, and R. Saathof, *OTClim: Generating a near-surface climatology of optical turbulence strength (C_n^2) using gradient boosting*, Aug. 2024. DOI: 10.48550/arXiv.2408.00520. arXiv: 2408.00520 [physics], under review.
- [4] M. Pierzyna, O. Hartogensis, S. Basu, and R. Saathof, “Intercomparison of flux, gradient, and variance-based optical turbulence (C_n^2) parameterizations,” *Applied Optics*, vol. 63, no. 16, Jun. 2024. DOI: 10.1364/AO.519942.
- [3] M. Pierzyna, R. Saathof, and S. Basu, “II-ML: A dimensional analysis-based machine learning parameterization of optical turbulence in the atmospheric surface layer,” *Optics Letters*, vol. 48, no. 17, Sep. 2023. DOI: 10.1364/OL.492652.
- [2] M. Pierzyna, R. Saathof, and S. Basu, “A multi-physics ensemble modeling framework for reliable C_n^2 estimation,” in *Proceedings of Environmental Effects on Light Propagation and Adaptive Systems VI*, vol. 12731, SPIE, Oct. 19, 2023, pp. 185–191. DOI: 10.1117/12.2680997.
- [1] M. Pierzyna, D. A. Burzynski, S. E. Bansmer, and R. Semaan, “Data-driven splashing threshold model for drop impact on dry smooth surfaces,” *Physics of Fluids*, vol. 33, no. 12, Dec. 2021. DOI: 10.1063/5.0076427.

AWARDS AND HONOURS

Best Student Paper Award Optica Imaging Congress 2024	2024-07
Highlighting of Pierzyna <i>et al.</i> [3] as “Editors’ pick” Optica Publishing Group	2023-09
Best Student Paper Award SPIE Remote Sensing 2023 – Environmental Effects on Light Propagation and Adaptive Systems	2023-09

MACHINE LEARNING COMPETITIONS

Kelp Wanted: Segmenting Kelp Forests Finished #38/671; resulting <i>KelpNet</i> presented at ESA/ECMWF ML4EOPS as poster	2024-02 DrivenData
--	-----------------------

RESEARCH VISITS

University at Albany Visiting Scientist	2024-09 – 2024-11 Albany, NY, USA
Fraunhofer Institute of Optronics, System Technologies, and Image Exploitation (IOSB) Visiting Scientist	2024-01-10 –12 Ettlingen, Germany
National Center of Atmospheric Research (NCAR) Participant, NCAR Advance Study Program, Summer Colloquium 2023	2023-07-17 – 28 Boulder, CO, USA

PRESENTATIONS AND CONFERENCES

- **Airforce Institute of Technology**, Dayton, OH, USA (virtual talk) 2024-08
Generating a near-surface climatology of optical turbulence strength (C_n^2) using gradient boosting
- **Optica Imaging Congress 2024**, Toulouse, France (talk) 2024-07
Generating a near-surface climatology of optical turbulence strength (C_n^2) using gradient boosting
- **ESA/ECMWF ML4EOPS**, Frascati, Italy (poster) 2024-05
(Machine Learning for Earth System Observation and Prediction)
KelpNet: Probabilistic Multi-Task Learning for Satellite-Based Kelp Forest Monitoring
- **Dutch Meteorological Society, Annual Meeting**, Utrecht, The Netherlands (talk) 2023-11
 Π -ML: A Dimensional Analysis-Based Machine Learning Parameterization of Optical Turbulence in the Atmospheric Surface Layer
- **TMT International Observatory**, Pasadena, CA, USA (virtual talk) 2023-09
 Π -ML: A Dimensional Analysis-Based Machine Learning Parameterization of Optical Turbulence in the Atmospheric Surface Layer
- **SPIE Remote Sensing 2023**, Amsterdam, The Netherlands (talk) 2023-09
A multi-physics ensemble modeling framework for reliable C_n^2 estimation
- **COAT 2023**, Durham, UK (talk) 2023-03
(Communications and Observations through Atmospheric Turbulence)
Parametrizing optical turbulence (C_n^2) in the atmospheric surface layer with gradient boosting

REVIEWING ACTIVITIES

Quarterly Journal of the Royal Meteorological Society

VOLUNTARY WORK

Erasmus Student Network Germany Multiple managing positions, currently, International Coordinator	2021-03 – ongoing Germany
L.G. Snellius (study association) Board member	2023-04 – 2024-03 Delft, The Netherlands

OTHER QUALIFICATIONS

- Language skills: German (native), English (proficient, CEFR C2), Dutch (independent, CEFR B2)
- IT skills: Linux administration, networking, Python, PyTorch, Keras, Tensorflow, git, L^AT_EX, handling large datasets (version controlled)
- Weather Research and Forecasting (WRF) modeling on HPC