Marc Rußwurm

Contact

Email	marc.russwurm@gmx.de
Phone	+49 172 81 70 121
Twitter	twitter.com/MarcCoru
GitHub	github.com/MarcCoru

Experience

from Sept 2021 — Research Associate and PostDoc

École polytechnique fédérale de Lausanne

Environmental Computational Science and Earth Observation Laboratory: Research: Machine Learning and Earth Observation; Domain Shift and Transfer Learning. Self-supervised representation learning on globally distributed data.

Jan–Mar '20 — Visiting Researcher Palo Alto, USA

Stanford University (Visit)

Lobell Lab and Sustainability and AI Lab
Few-Shot Meta Learning for the Remote Sensing context. Research received *Best Paper Award* at Earthvision 2020 worshop at CVPR

May '19 — Visit OATML Oxford, UK

Oxford Applied Machine Learning Group (Visit)

Visit (one-week). Participation in ESA project:
Multi-image super-resolution on Satellite Data. Presentation about Machine Learning and Earth Observation.

Oct '18–Feb '19 — Visiting Researcher Vannes, France

IRISA Institute (Visit)

Environment Observation with Complex Imagery:
Research stay. Early classifification of time series. Multi-objective optimization (optimize accuracy and earliness).

2018 - 2021 — Research Associate and Ph.D. Candidate

Technical University of Munich

Chair of Remote Sensing Technology:
Research fields: Multi-temporal Earth observation, machine learning and computer vision. Methodical work related to methods of natural language processing and applied to vegetation monitoring for Earth observation.

July–Aug 2018 — Participant—Frontier Developments Lab

University of Oxford & European Space Agency

Kellogg College in Oxford, UK & ESRIN Φ-lab, Frascati near Rome, Italy.
Deep multi-resolution satellite data-fusion for disaster relief. The Frontier Developments Lab is an research and commercial accelerator composed of teams with machine learning and Earth observation background.

2015–2018 — Student Research Assistant

Technical University of Munich

Chair of Remote Sensing Technology:
Tutor 3rd MSc. Semester: Image Understanding III. UAV Software Integration (ROS/C++).

Apr–Oct 2016 — Erasmus+ SMP Trainee — Warsaw, Poland

Polish Academy of Science

Space Research Center, Earth Observation Group: Earth observation and remote sensing research; detection of explicit crop parcels, reference data from Myanmar and Poland; presentation at Polish-National Remote Sensing Conference.

Education

2018 – 2021 Technical University of Munich

Ph.D. (Dr.-Ing)

Chair of Remote Sensing Technology: Computer Vision Research Group: sequential data processing. multi-temporal Earth observation. sequence to sequence models and attention mechanisms for vegetation monitoring

2015–June 2018 Technical University of Munich

Master of Science

Geodesy and Geoinformation (M.Sc): Machine Learning, Computer Vision, Deep Learning, Earth Observation, Remote Sensing, Photogrammetry.
Thesis: *Multi-temporal Land Cover Classification with Recurrent-Convolutional Neural Networks*
Cooperation: *Bavarian Ministry of Food, Agriculture and Forestry (StMELF).*

2011–2015 Technical University of Munich

Bachelor of Science

Geodesy and Geoinformation (B.Sc): Photogrammetry, Remote Sensing, Surveying, Cartography, Geo-informatics, Gravity Science, GNSS Science, and Land Management.
Thesis: *Tri-ocular Image Rectfification and Photogrammetric Reconstruction*

Awards

June 2020 Best paper - Earthvision Workshop at Computer Vision and Pattern Recognition Workshop (2020) (link)

Oct. 2017 Best presentation - NVIDIA Deep Learning Workshop at Leibnitz Supercomputing Center (LRZ)

July 2017 Best paper - Earthvision Workshop at Computer Vision and Pattern Recognition Workshop (2017) (link)

Sept. 2016 Best presentation - Polish-National Remote Sensing Conference (link)

Nominations

Oct. 2020 Double Nomination at IGARSS 2020 Best Student Paper Award (final 10 out if 250 submissions) with (Wang et al., 2020)´ and (Rußwurm et al., 2020)

Nov. 2019 Nominated for the AI-Newcomer award of German Informatics Society (GI) and the Federal Ministry of Education and Research (BMBF) in the category of natural sciences

Grants

March 2020 DAAD-IFI Stipend for Research Stay at Lobell Lab, Stanford University

June. 2019 Travel Grants ICML Workshops on *AI for Social Good* and *Time Series*

May. 2019 Google Education Credits - 5k$ in Google Credits for Crop Type Mapping

June 2017 Travel grant - of International Society for Photogrammetry and Remote Sensing (ISPRS) (link)

Github Contributions

BreizhCrops

Maintainer
A benchmark dataset for crop type mapping

TSLearn

Minor Contributor
A machine learning library for Time Series Analysis

Pytorch-Meta

Minor Contributor
A machine learning library for Meta-Learning in Torch

Selected Bibliography

For the complete list see Google Scholar Profile

Journal Publication

Rußwurm, M., & Körner, M. (2018). Multi-temporal land cover classification with sequential recurrent encoders. ISPRS International Journal of Geo-Information, 7(4), 129.

Journal Publication

Rußwurm, M., & Körner, M. (2020). Self-attention for raw optical satellite time series classification. ISPRS Journal of Photogrammetry and Remote Sensing, 169, 421-435.

Book Chapter (to appear)

Rußwurm, M., & Körner, M. (2021). Recurrent Neural Networks and the Temporal Component, Deep Learning for the Earth Sciences. Editors Gustau Camp-Valls, Xiaoxiang Zhu, Devis Tuia. To appear 2021.

CVPR-Earthvision Conference Proceeding

Rußwurm, M., & Korner, M. (2017). Temporal vegetation modelling using long short-term memory networks for crop identification from medium-resolution multi-spectral satellite images. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops (pp. 11-19). **Best Paper**

CVPR-Earthvision Conference Proceeding

Rußwurm, M., Wang, S., Korner, M., & Lobell, D. (2020). Meta-Learning for Few-Shot Land Cover Classification. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (pp. 200-201). **Best Paper**

IGARSS Conference Proceeding

Marc **Rußwurm**, Syed Mohsin Ali, Xiao Xiang Zhu, Yarin Gal & Marco Körner (2020, October). Model and Data Uncertainty for Satellite Time Series Forecasting with Deep Recurrent Models. In 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS). IEEE. **Student Paper Award Finalist**

IGARSS Conference Proceeding

Sherrie Wang, Marc **Rußwurm**, Marco Körner & David Lobell (2020, October). Meta-Learning for Few-Shot Time Series Classification. In 2020 IEEE International Geoscience and Remote Sensing Symposium (IGARSS). IEEE. **Student Paper Award Finalist**

Benchmark Dataset

Rußwurm, M., Lefèvre, S., & Körner, M. (2019, June). Breizhcrops: A satellite time series dataset for crop type identification. In Proceedings of the International Conference on Machine Learning Time Series Workshop.

Machine Learning Library

Romain Tavenard and Johann Faouzi and Gilles Vandewiele and Felix Divo and Guillaume Androz and Chester Holtz and Marie Payne and Roman Yurchak and Marc **Rußwurm** and Kushal Kolar and Eli Woods (2020). Tslearn, a machine learning toolkit for time series data. Journal of Machine Learning Research, 21(118), 1-6.