acob Bieker

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EXPERIENCE Machine Learning Team, Vida

Senior Machine Learning Engineer

Create climate risk indicators for infrastructure globally

Lead on developing new indicators and working with climate models and geospatial foundation models

Build and release open geospatial datasets

Mentor and manage more junior members of the team

Machine Learning Team, Open Climate Fix

Senior Machine Learning Research Engineer Jun 2021 - May 2024 Research, implement, and productionize machine learning models for solar power forecasting using numerical weather simulations, satellite imagery, and other multi-modal data Engage with, build, and contribute to the open source community around energy forecasting Work with other open-source organizations to democratize access to state-of-the-art forecasting models, including graph networks and transformers

Collate and release public geospatial datasets for weather and solar forecasting Mentor and manage more junior members of the team

Project Resilience, International Telecommunication Union

Volunteer Machine Learning Engineer

Jul 2022 - Present Building an MVP for an AI utility to help policy makers, NGOs, academics and others act on the UN Sustainability Development Goals

Collate, clean, and extract data from various public sources into a central database for training ML models

Train ML models for predicting and prescribing actions for policy makers from curated datasets Publish datasets and papers related to the work

Freelance (Part-time),

Machine Learning Engineer

Research, create, and run AI weather assimilation and forecasting systems

Implemented and productionized models for detecting diagnosable quality frames from handheld videos of the eye for use by ophthalmologists in detection of diabetic retinopathy.

Deployed models on AWS to support fast inference.

Built and deployed interactive segmentation models.

Research and build model routing systems for large language models.

Machine Learning Research Team, Scale AI

Machine Learning Research Engineer

Develop machine learning solutions to assist humans in the loop.

Use state of the art 3D and 2D models for self-driving projects using sensor fusion of LiDAR+RGB. Work with massive datasets to develop generic and fine tune models for specific products.

Huub Group, Leiden University

Graduate Student Researcher Developing machine learning tools to analyze LOFAR radio survey data of the entire northern sky for source association and identification.

Gsuite Growth Team, Google

Software Engineering Intern

Implemented an end-to-end machine learning pipeline for Gsuite.

Presented deep dives into machine learning to team members, and worked with data scientists to develop better models and pipelines for the project.

Goddard Space Flight Center, NASA

Machine Learning Intern Jun 2019 – Aug 2019 Developed Machine Learning algorithms for hyperspectral image segmentation with Hyperion data for use in future NASA Earth observation satellites.

Hodge Group, Leiden University

Graduate Student Researcher Sep 2018 – Jul 2019 Study CO emitting galaxies in the GOODS-South field as part of the Wide-ASPECS survey Analyzed multi-wavelength data and integrated that data with new data from the survey

Biophysics, Imaging, Soft Materials Lab, University of Oregon

PURS Undergraduate Researcher Sep 2017 – Jun 2018 Study how structure affects the growth and development of gut microbe communities Create 3D data visualizations using virtual reality

Astroparticle Physics Group, Technische Universitaet Dortmund

RISE Germany Research Intern

Jun 2017 – Sep 2017

Improved unfolding techniques for data from FACT telescope Developed machine learning software for automated gamma-ray spectrum analysis

Sep 2021 – Present

May 2024 – Present

Sep 2020 - May 2021

Feb 2020 – Jan 2021

Sep 2019 – Dec 2019

Produced Tech Report

FisherGroup, University of Oregon

Undergraduate Researcher Dec 2014 – Sep 2017 Analyzed Gemini spectrometric and HST photometric data as part of the Galaxy Cluster Project Developed visualizations of the data Developed user interfaces and other software for the Pine Mountain Observatory Published paper and presented research at international conferences

High-Performance Computing Lab, University of Oregon

Undergraduate Researcher

Mar 2016 – Jul 2017

Analyzed scientific texts using natural language processing Published paper and presented research at undergraduate symposium

Institute of Theoretical Science, University of Oregon

Undergraduate Researcher Ran simulations of Type Ia supernovae and Rossby Wave Instabilities Lead student researcher of group Visualized output data from simulations Initiated collaboration between computer science research group and astrophysics group Modified Chymera software for better parallelization and in-situ data processing

PUBLICATIONS PAPERS

"Forecasting regional PV power in Great Britain with a multi-modal late fusion network" ICLR 2024 Tackling Climate Change with Machine Learning, May 2024.

- "RouterBench: A Benchmark for Multi-LLM Routing System" ICLR 2024 AGI Workshop, May 2024.
- "Discovering Effective Policies for Land-Use Planning" *NeurIPS 2023 Climate Change AI Workshop*, Dec 2023.
- "Advances in solar forecasting: Computer vision with deep learning" Advances in Applied Energy, Sep 2023.
- "The Evolution of Bulge-dominated Field Galaxies from $z \approx 1$ to the Present" The Astrophysical Journal, Sep 2017.
- "RISE Germany Internship: Unfolding FACT Data" TU Dortmund, Nov 2017.

"Do you know where your research is being used? An exploration of scientific literature using Natural Language Processing" *Oregon Undergraduate Research Journal*, vol. 10, no. 1, pp. 20–31 Jan 2017.

PRESENTATIONS

"Discovering Effective Policies for Land-Use Planning" GECCO 2024, Jul 2024.

- "Effect of Satellite Imagery and Machine Learning In An Open-Source Solar Power Forecasting Project" International Conference on Energy and Meterology 2023, Padova, Italy, Jun 2023.
- "Automated Radio Source Component Association and Cross-Identification for LoTSS" *European Astronomical Society Annual Meeting 2020*, Leiden, The Netherlands, Jun 2020.
- "Exploring Deep Learning for FACT Source Detection" 232nd Meeting of the American Astronomical Society, Denver, Colorado, USA, Jun 2018.

"Evolution in Solitude – Field Galaxies from Half the Age of the Universe to the Present" 229th Meeting of the American Astronomical Society, Grapevine, Texas, USA, Mar 2017.

"Life in Low Density Environments - Field Galaxies from Z-1.0 to the Present" at 29th International Astronomical Union General Assembly, Honolulu, Hawaii Aug 2015.

EDUCATIONLeiden University, Leiden, NetherlandsMSc AstronomySep 2018 – Jan 2021Astronomy and Data Science specialization GPA: 7.81/10 (UK: Upper 2:1)Thesis: Clustering and Physical Properties of CO Emitters in Wide ASPECSThesis: Cross Identification for the extended faint radio source population in the LoTSS SurveyUniversity of Oregon, Eugene, Oregon, USABSc Physics, Computer and Information ScienceSep 2014 – Jun 2018Thesis: Using Deep Learning for FACT Gamma/Hadron ClassificationSep 2014 – Jun 2018Robert D. Clark Honors CollegeDepartmental honors: Physics, Computer and Information Science GPA: 3.55/4.0 (UK: 2:1)Trans-Atlantic Science Student Exchange ProgramAug 2016 – Jun 2017

Aarhus University, Denmark

SKILLSLanguages: Python, Java, RTools: PyTorch, Tensorflow, Keras, TFX, GCP, AWS, Git, Docker, Xarray, Zarr