

Jacob Bieker

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EDUCATION

Leiden University, Leiden, Netherlands

MSc Astronomy

Sep 2018 – Present

Astronomy and Data Science specialization

University of Oregon, Eugene, Oregon, USA

BSc Physics, Computer and Information Science

Sep 2014 – Jun 2018

Thesis: Using Deep Learning for FACT Gamma/Hadron Classification

Robert D. Clark Honors College

Departmental honors: Physics, Computer and Information Science

Trans-Atlantic Science Student Exchange Program

Aug 2016 – Jun 2017

Aarhus University, Denmark

Astronomy, Computer Science

La Salle Catholic College Preparatory, Milwaukie, Oregon, USA

H.S. Diploma

Sep 2010 – Jun 2014

Salutatorian, STEM Scholar

German-American Partnership Program Exchange

RESEARCH EXPERIENCE

Hodge Group, Leiden University

Graduate Researcher

Sep 2018 – Present

Study CO emitting galaxies in the COSMOS 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 Universität 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

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

Feb 2015 – Aug 2016

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

Center for High Energy Physics, University of Oregon

Undergraduate Researcher

Jan 2016 – Aug 2016

Worked on visualizing and analyzing luminosity data from the ATLAS experiment

Compared luminosity readings from ATLAS and CMS

Presented findings to CERN researchers

Computing and Data Understanding at eXtreme Scale (CDUX), University of Oregon

Undergraduate Researcher

Jan 2016 – Jun 2016

Integrated data visualizations with astrophysics simulations to improve resource utilization

Initiated collaboration between two research groups

Computational Biology Program, Oregon Health and Science University

Quantitative Bioscience and Biomedical Engineering Intern Jun 2015 – Aug 2015

Developed software for data visualization of large genomics sets and patient data

Collaborated with national and international research groups

Developed error correction software using statistical analysis

Improved database software for use with the Collaborative Cancer Cloud

PUBLICATIONS

PAPERS

“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

“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.

AWARDS

Presidential Undergraduate Research Scholar 2017

DAAD Research Internships in Science and Engineering (RISE) Scholar 2017

NASA Oregon Space Grant Consortium Undergraduate Scholarship 2016

Henry V. Howe Scholarship 2016, 2017

1st Place Venture Labs: Telescope Competition 2015

Roe E. Stamps Leadership Scholarship 2014

ORGANIZATIONS

Design For America,

University of Oregon, Eugene, Oregon

Team Lead - Wearable Technology 2017 – 2018

WORK EXPERIENCE

Institute of Neuroscience, University of Oregon

Software Developer Jun 2015 – Aug 2016

Designed and implemented software solutions independently within given constraints

Worked with databases, such as SQLite, PostgreSQL, and FileMaker

Create software using Python for National Science Foundation (NSF) Research Experience for Undergraduates (REU) programs

Oregon Undergraduate Research Journal, University of Oregon

Web Developer May 2015 – Apr 2016

Developed and maintained website dedicated to undergraduate research for all Oregon University System schools

In charge of user experience, design, and development

University of Oregon, Eugene, Oregon

Technical Support Analyst Apr 2015 – Jun 2015

Work with staff, faculty, and students to troubleshoot and fix technological problems

Wrote articles and how-to's on various subjects.

SKILLS

Machine Learning

Data Visualization

Data Analysis

Programming Languages: Python, C, Java, R, ROOT, Fortran