Sam Dixon

Astrophysicist turned Data Scientist

samdixon526@gmail.com
github.com/sam-dixon
linkedin.com/in/sam-m-dixon
(732) 407-9177

EXPERIENCE

Data Science Intern,
Square, Inc., San Francisco, CA

June 2019 - September 2019

- Built tree-based models to improve targeting for direct mail advertisements
- Compared a variety of model methodologies and engineered features to increase return on investment by 30%
- Ported older models to cloud-based infrastructure to automate model training and deployment
- Refactored SQL queries and parallelized code to cut model training and validation time in half

Supernova Cosmology Project,
Lawrence Berkeley National Laboratory, Berkeley, CA

August 2015 - Present

- Used machine learning and statistical techniques to better understand the spectral evolution of Type Ia supernovae
- Obtained data from ground- and space-based telescopes and wrote Python code to clean and analyze the data
- Used linear dimensionality reduction and kernel density estimation to create more varied and accurate simulations of supernova observations for future missions
- Built and tested neural networks in keras to assess their ability to capture a wider range of supernova behavior

Dark Matter in CCDs/Pierre Auger Observatory,
University of Chicago, Chicago, IL

June 2012 - June 2014

- Made precise measurements of quantum efficiency of photomultiplier tubes used to study ultra-high energy cosmic rays
- Estimated the radioactive contamination of CCD detectors used to search for dark matter

PROJECTS

Co-Director — Graduate Data Science Organization

September 2017 - Present

- Organized 2018 and 2019 Data Science Workshops, matching over 100 graduate students and postdocs with industry mentors to complete 3-week data science projects
- Led introductory tutorials on Git and machine learning with scikit-learn
- Collaborated with other DS groups in professional schools to host mixers and speaker events
- Built and maintain web page

Simulating AI — Creating characters for Proxi

- Used NLP toolkits (spacy+textacy) to build example in-game character profiles from a corpus of text
- Interacted with APIs to find images to represent character traits

EDUCATION

University of California, Berkeley
MA/PhD Physics

August 2014 - PRESENT
(PhD expected December 2020)

Dissertation: Empirical Models of Type Ia Supernovae for Future Cosmology Surveys

University of Chicago
BA Physics and Mathematics

September 2010 - June 2014

Honors thesis: Dark Matter in CCDs

SKILLS

- Python (numpy, scipy, pandas, scikit-learn, Keras, Flask)
- Neural networks
- HTML/CSS
- Git
- Google Cloud Platform, Airflow
- SQL

AWARDS

Best Exploratory Data Analysis
Citadel UC Berkeley Data Open 2017, 2018, and 2019

Best Use of Code: Visualizing the Gender Pay Gap
WomenHack 2017

Chambliss Astronomy Achievement Award, American Astronomical Society
Honorable Mention, 2016

National Science Foundation Graduate Research Fellowship Honorable Mention, 2015

ARCS Foundation Scholar
2014 - 2019

Nathan Sugarman Award for Excellence in Undergraduate Research
2014