DANIEL GOLE

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EXPERIENCE

Insight Data Science Fellow

September 2019 – Present | San Fransisco, CA

- Created an analysis tool for a sports betting company to reduce and combine their data sets and then look for systematic and exploitable weakness in their bet-setting algorithms.
- Built adversarial betting models using python, pandas, and scikit-learn to place bets against lines provided by the company.
- Models yield at least a 10% return on investment on test sets in two betting categories and do at least 5% better than random betting in all categories.
- Implemented modeling as a pipeline such that it can be used to test new bet-setting methods, allowing the company to iterate on their models before deploying them into production. This reduces financial risk by reducing potential vulnerabilities.

Research Assistant: Computational Fluid Dynamics and Planet Formation

CU Boulder

August 2014 – August 2019 | Boulder, CO

- Performed highly parallelized simulations of protoplanetary disks on supercomputers using a c-based code library.
- Designed tools to analyze tens of TB of data from simulations primarily using python, numpy, and scipy. Analysis methods included temporal correlation analysis, perturbation analysis, spatial and temporal spectra.
- Fit models to simulation results using a maximum-likelihood approach and Monte Carlo sampling methods.
- Created a pipeline in python to track clumps of particles and used it to demonstrate that planets form more slowly in turbulent environments.

Graduate Part Time Instructor

CU Boulder

July 2018 – August 2018 | Boulder, CO

- Instructor of record for an introductory-level astrobiology course: "The Search for Life in the Universe".
- Taught concepts from physics, astronomy, chemistry, biology, and geology to students from a variety of academic backgrounds.
- Designed new tutorials and worksheets to lead students through inquiry-based learning exercises. These have been used by about 60 students over 2 sessions.

Research Assistant: Photometric Data Reduction

SUNY Geneseo

May 2011 – May 2013 | Geneseo, NY

- Implemented a procedure to reduce, standardize, and analyze images of clusters of stars.
- Automated parts of the pipeline using bash scripts, significantly reducing the human-hours required to analyze a data set.
- Used a Mathematica-based N-Body code to compute the long term behavior of large stars in clusters, demonstrating that the system is unstable even on short time-scales.

SKILLS

Languages: Python, Mathematica, Bash, C++, C

Packages: Numpy, Matplotlib, Scipy, Pandas, SKLearn

Tools: Git/Github, Jupyter, Latex, Docker

Other: Statistics, High Performance Computing

Effective and concise communicator, presenter, and writer.
Work well both individually and as a team member.

EDUCATION

Ph.D in Astrophysical Sciences

University of Colorado at Boulder

August 2019 | Boulder, CO

B.A. in Physics

SUNY Geneseo

May 2013 | Geneseo, NY