Jonathan Whitmore

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Programming and Development Skills

Languages Python, SQL, LaTeX, Markdown, shell scripts, CSS, HTML. Some exposure: C, jQuery, JavaScript, D3.

Tools IPython, matplotlib, numpy, scikit-learn, scipy, pymc, git, Github, BeautifulSoup, pandoc, MySQL.

Experience

2014 **Insight Data Science Fellow – Insight Data Science,** Palo Alto, CA, USA.

- Created HammerPricer.com: A webapp that predicts the price at which Abstract Expressionist art will sell at auction.
- Scraped historical auction data from websites using Python libraries: BeautifulSoup, mechanize, and selenium.
- Stored the data in MySQL, analyzed the data using the Python library scikit-learn.
- Created the interactive web app using Flask, Bootstrap, jQuery, and AWS.

2011–2014 **Postdoctoral Research Associate – ESO Large Programme**, *Swinburne University*, Melbourne, AUS.

- Cleaned noisy and inhomogeneous astronomical data taken over four years by different observing groups.
- Curated central data repository of final products; developed an automated process to update data repository; created web interface for collaborator access to the repository.
- Utilized numerous statistical techniques, including sensitivity analysis on non-linear propagation of errors, Markov-Chain Monte Carlo for model building, and hypothesis testing via information criterion.
- Simulated spectroscopic data to expose systematic errors that overturned a long-standing result on whether the fundamental physical constants of the universe are constant.

2005–2011 **Graduate Student Researcher**, *UCSD*, San Diego, CA, USA.

- Reduced raw data from telescope instruments and cleaned them into usable spectra.
- Fitted numerous mixture models to astrophysical data from different telescopes.
- Developed a novel technique to extract information from high resolution spectroscopic data that led to uncovering unknown short-range systematic errors.

Side Projects and Coursework

2012–2014 Developer of RebalanceAssetAllocation, a Python module that recommends financial asset class allocations.

2014 Contributor to astropy, an open source Python astronomy library hosted on Github.

2013 Developer of dipole_error, an astronomy Python module.

2013 Co-star and co-narrator of Hidden Universe, a 3D IMAX astronomy film playing worldwide.

2007–2008 Grad Physics Course: Stochastic Methods – methods of stochastic modeling and simulation.

2008–2009 Grad Physics Course: Computational Physics – probabilistic models and simulations.

Education

2011 **PhD Physics**, *University of California San Diego*, San Diego, CA, USA.

2007 **MS Physics**, *University of California San Diego*, San Diego, CA, USA.

2005 **Bachelor of Science–Magna Cum Laude**, *Vanderbilt University*, Nashville, TN, USA.
Triple major: Physics (honors); Mathematics; Philosophy.