Chris Beaumont

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Skills

Python: Scientific programming, Qt, Cython
Web Development: Django, Flask, PostgreSQL, SQAlchemy, Celery, D3.js
Deployment Tools: Amazon Web Services, Docker, GoCD, TravisCI
Data Analysis: Machine learning, Bayesian analysis, image processing, Monte Carlo methods, Tableau, Looker

Experience

Software Engineer, Genomics Team | Counsyl San Francisco, CA — 2015–Present
Designed and maintained software responsible for human- and machine-driven clinical interpretation of 50,000 DNA test results per month.

- Lead the development of an Extract-Transform-Load pipeline to facilitate the Genomics group's batch data processing needs. This system has become our primary platform for importing and exporting data necessary for daily Genomics operation.
- Created a backtesting system for evaluating proposed changes to our clinical auto-interpretation engine. Optimized the existing engine to be 100 times faster at bulk reprocessing of historical data, and developed a standardized workflow for analyzing backtesting results. This has allowed us to iterate on automation strategies twice as quickly, while maintaining high clinical quality.
- Implemented a "Mutation Search Engine" to give genetic counselors easy browser access to internal data about genetic variants. This has afforded non-engineers more autonomy for data exploration.

Software Engineer | Harvard-Smithsonian Center for Astrophysics Cambridge, MA — 2014–2015
Created and lead the development of Glue, a Python and QT application to build interactive, linked-view visualizations of interrelated scientific datasets.

- Contracted with NASA to develop Glue as a tool to visualize spectroscopic data from the James Webb Space Telescope (the planned successor to Hubble).
- Brought Glue to maturity, such that the software continues to be actively used and developed now that I have stepped down as lead developer.

Contract Software Engineer | Paradigm4 Waltham, MA — 2014–2015
Developed the Python client to SciDB, an array-oriented database.

- Developed a new lower-level, auto-generated API layer to wrap SciDB's native query primitives; used this to simplify and extend the existing high-level NumPy-like interface. This simplified the implementation details of SciDB-Py, and simultaneously gave users better control when building complex SciDB queries.

Head Teaching Fellow, Data Science | Harvard University Cambridge, MA — Fall 2014

- Co-designed the curriculum for Harvard's first course on Data Science (400 enrolled students, broadcast online).
- Managed a team of 12 teaching fellows to facilitate grading, labs, and day-to-day administrative tasks.

Education

University of Hawaii Honolulu, HI — Ph.D. Astronomy, 2014
Dissertation Topic: Molecular Diagnostics of Star Formation in Molecular Clouds
University of Hawaii Honolulu, HI — M.S. Astronomy, 2009
Calvin College Grand Rapids, MI — B.S. Physics, 2007

Selected Projects

Glue | github.com/glue-viz/glue
SciDB-Py | github.com/paradigm4/SciDB-Py
Soupy | github.com/chrisbeaumont/soupy
Harvard Data Science Course Material | github.com/cs109/content
Visualizing Texas Hold'em Hands | chrisbeaumont.org/holdem_odds

Selected Press

FiveThirtyEight | Weekly Data Journalism Round-Up, 2–22–2015
Harvard Magazine | Popular Science Features, 1–2014
Wall Street Journal | And the Oscar Pool Winners Are…the Stats Dudes, 2–23–2013