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Profile

I am a passionate and resourceful problem solver and data hacker with analytical acumen and experience in high-performance, rapid-response environments. *I want to build meaningful, useful applications*. My primary skills are:

- Creative, flexible, and rapid problem analysis
- An ability to learn anything, proficiently and quickly
- A knack for to-the-point communication
- A driven, independent work ethic

Primary Professional Experience

Software Developer, Achievement Asset Management (formerly Peak6 Investments), Chicago, IL, Sep. 2013 - present

- Extensive real-world experience developing in the Python programming language
- Went from having no finance or real-world dev experience to being a trusted source of information on myriad topics in the day-to-day operation of a successful hedge fund by asking thoughtful questions, diving into our codebase, actively participating in discussions, conferences, and training, and researching independently
- Have been described by managers and coworkers as having "great attention to detail," a "genuine interest", and being "reliable," "an excellent learner," "responsible," a "future leader," and "our favorite dev to work with"
- Assisted in the planning and execution of our central data warehouse by researching possibilities, mocking up best options, developing prototypes and implementation plans, and executing those plans
- Replaced legacy file transfer and clearing process into a sleeker, more reliable ETL process in under two weeks
- In one year, became the only dev in the organization to understand and develop for all of our systems from installation to standard use cases, and am primarily responsible for three quarters of them

Education

Cornell University, Ithaca, NY
Master of Science, Theoretical Physics (minor emphasis experimental physics), October 2013 — 3.86 GPA
National Science Foundation Graduate Research Fellow

University of Notre Dame, Notre Dame, IN
Bachelor of Science (magna cum laude), Physics and Mathematics, January 2008 — 3.88 GPA
Minor Emphasis in College of Arts & Letters and Science Honors Program

Other Experience

Research Assistant, Cornell University, Ithaca, NY 14851, June 2009 - August 2013
Teaching Assistant, Cornell University, Ithaca, NY 14851, August 2008 - June 2010
Science Education Outreach Volunteer, January 2008 - August 2013
Executive Member, Physics Graduate Society, Ithaca, NY 14851, May 2009 - August 2013

Skills and Strengths

Analysis

- Designed and constructed advanced computer simulations (involving state-of-the-art classical and quantum Monte Carlo techniques) to study physical systems
- Designed and implemented an end-to-end ETL library for acquisition, cleaning, and storage of sensitive reconciliation data
- Maintained and data-mined large-scale computational physics simulations over the course of four years
- Performed quantitative and qualitative analysis of large data sets using the scientific Python stack, and developed methods for extracting meaningful correlations and relationships for scientific publication
- Wrote efficient, well-documented, and object-oriented code in Python, C++
- Analyzed and critiqued the work of professional scientists and discussed my analysis with fellow research scientists
- Designed a multi-year strategic plan for answering scientific research questions in the field of highly frustrated magnets
- Independently developed business usage reporting to make successful recommendations on license purchasing and usage
- Approached multi-institution processes (reporting, clearing, and file transfer among multiple vendors), identified the key technical requirements, and created a highly reliable framework meeting all business needs
- Completed several Coursera tracks on data science and analytics

Problem Solving

- Developed a novel family of models to analyze unsolved and intractable physical phenomena
- Reduced several hundred lines of custom in-house Python code with one bash script and the right ftp client (lftp)
- Learned several programming languages and tools (Python, C/C++, FORTRAN, Git, Mathematica, Google's Protocol Buffers, OpenGL) independently to solve problems and advance analysis capabilities
- Posed an advanced scientific question, produced results, and published those results
- Learned and implemented computational methods which allowed for effective calculations of research problems too computationally difficult for traditional methods

Software Development

- Continually sought to expand my proficiency in the Python programming language
- Focused on increasing knowledge of DevOps monitoring practices and collaborative tech team workflow processes by consulting with teammates and mentors on best practices
- Independently learned the R programming language and related content distribution packages (e.g., RShiny), advocated for and successfully applied them in the business setting
- Experienced myriad of development environments (e.g., team-based vs independent; multiple operating systems, physical/virtual architectures, and languages; open source vs. proprietary; vendor vs. in-house; long-term vs. high-urgency development)
- Am extremely flexible when it comes to languages, best practices, and institutional preferences - "use the best tool, not 'your' tool"
- Completely and succinctly documented code with a primary emphasis on supportability by other developers

Programming Experience

- **programming and scripting languages**: excellence in python (1, 2, 3, 4, 5, 6) and bash (1, 2); proficiency in R (1), C, C++, (Postgre)SQL, and xpath; and experience with C#, Java,Ruby/Rails, FORTRAN, Matlab, Octave, Mathematica, (La)Tex, markdown, sweave, PowerShell, Julia, JavaScript, CSS, html, OpenGL
- **special focus areas and code libraries**: scientific python stack (Numpy, SciPy, Pandas, scikit-learn, matplotlib, plotly, ipython/jupyter), python web development (flask and tornado), C++ Boost libraries
- **development and system administration tools**: emacs (w ESS), vim (if I must), Eclipse, putty, git, github, Atlassian tools (JIRA, Confluence), SOS Open Source Job Scheduler, Zenoss, Graylog, WireShark
- **data transport, serialization and configuration**: XML, SOAP, JSON, YAML, ProtocolBuffers, KML, GeoJSON, FIX, html, REST
- **nitty gritties**: ssh, (s)ftp, snmp, rsync, packet sniffing, GNU tools, linux (mostly debian) utilities

Communication

- Cultivated positive, friendly, and professional relationships with everyone with whom I've worked
- Effectively communicated ideas concisely and completely in high-stress environments
- Established professional relationships with developers and vendors at professional conferences
- Published one scientific article in Physical Review Letters
- Presented research results at the 2012 American Physical Society March Meeting and the 2010 and 2012 Highly Frustrated Magnetism conferences both to large audiences and in one-on-one settings
- Advocated for STEM research and education funding to congressional delegations on behalf of the American Physical Society at the 20011 and 2012 Science-Engineering-Technology Congressional Visit Days
- Excelled in teaching Cornell University science courses which were aimed at non-scientist audiences

Leadership and Collaboration

- Worked in highly-collaborative teams of five to ten tech professionals at Peak6 and Achievement Asset Management
- Successfully lead tech team projects (such as a long-term reconciliation revamping for total return swap processing, and our internal compliance reporting) by clearly communicating expectations and constantly following up about tech team progress and business satisfaction and desires
- Served as Vice President, President, and Chief Advisor of the Cornell Physics Graduate Society, and acted as liaison to the academic administration to determine issues such as organizational funding and policies towards students
- Mediated interpersonal conflict as assistant rector at Notre Dame by facilitating conversations and diffusing emotional situations
- Completed the one-week "Leadership Assessment for Managers" course at Cornell University
- Arranged weekly graduate student science seminars and recruited graduate student participants
- Repaired a weakness in the physics graduate student curriculum by creating a for-credit summer reading course

Other Activities

Ithaca Big Brothers Big Sisters volunteer ● American Physical Society member ● Cornell Intramural Flag Football Champion
Creator of "Cornell Physics Graduate Society Coffee Hour Email" tradition ● Civic Hacker ● Chicago HackNight Enthusiast