Jeremy S. Ritter, Ph.D.

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Data Scientist   **Software Engineer**   **Astrophysicist**

Skills

- Mastered senior-level programming with C/C++, Fortran, Java, and Python (10+ years).
- Experienced with Python SciPy (Numpy, Matplotlib, Pandas, Scikit-learn, 4+ years), deep learning tools (Keras, OpenCV, 6+ months), and fine-tuning model hyper parameters with cross-validation (2+ years).
- Administrated Linux servers on the cloud (e.g. AWS), specializing in networks and security (15+ years).
- Developed numerous web-based projects using HTML, CSS, JavaScript, PHP, and SQL (15+ years), as well as with modern JavaScript frameworks (Node.js, jQuery, AngularJS, React, 2+ years).

Experience

Graduate Research Assistant   **August 2012 – August 2018**
Undergraduate Research Assistant   **May 2010 – August 2012**
The University of Texas at Austin

- Managed the entire research project lifecycle from inception, writing proposals, identifying and achieving production milestones, and publishing the final product in a prestigious scientific journal.
- Designed HPC simulations that evolved physical models on 250+ million particles and grid cells.
- Optimized parallel algorithms and data handling across 2000+ computing processes using MPI/OpenMP and GPU-accelerated linear algebra routines (MKL).
- Analyzed particle clustering using friends-of-friends, k-nearest neighbors, and kernel density estimation.
- Extracted cluster samples distributed over 30+ TB datasets and reduced dimensionality to model the evolution of non-linear profiles through time.
- Wrote custom utilities to compress and convert data between proprietary text and binary formats.
- Created data visualizations that appeared in 4 scientific journal publications with 150+ citations, and for the August 2014 issue of *Science Magazine (Vol. 345, Issue 6199)*.
- Invited to speak to a group of financial investors about the scientific benefits of their donations at the February 2015 Astronomy Board of Visitors Meeting.
- Mentored research collaborators and associates in parallel programming best practices and the application of advanced numerical techniques to their unique datasets.

Freelance Data Scientist   **May 2018**
Personal property taxes

- Generated dataset by XML parsing hundreds of public records scraped from the appraisal district website using automated HTTP search of nearby properties.
- Clustered properties with similar land values, square footage, and physical locations to determine the mean and variance of property values for properties similar to mine.
- Regressed expected property values to prove that my tax burden was 7% above both the neighborhood mean and cluster expectations.

Network Operations Engineer   **June 2007 – August 2014**
CoreNAP / The Zayo Group

- Automated network and compute resource provisioning pipeline using advanced shell scripting.

Education

Doctor of Philosophy in Astrophysics   **August 2018**
The University of Texas at Austin

Dual Bachelor of Science in Physics and Astronomy   **December 2011**
The University of Texas at Austin