Jeremy S. Ritter, Ph.D.

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

Texas-native data scientist has 8+ years experience developing parallel HPC simulations and analyzing massive datasets with state-of-the-art numerical methods. Experienced at optimizing parallel algorithms across 2000+ computing processes, applying advanced clustering and non-linear modeling techniques to gain deeper insight from high-dimensional datasets, and reducing multi-terabyte distributed data to create stunning visualizations. I am eager to transition the parallel computing and data science skills developed as a Doctor of Philosophy in Astrophysics towards optimizing deep learning networks.

Data Science Experience

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

Designed HPC simulations that evolved physical models using GPU-accelerated MKL routines on 250+ million particles and grid cells. 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. Wrote custom HDF5 utilities to compress and convert data between proprietary formats. Created visualizations for 4 journal publications with 150+ citations, and for the August 2014 issue of *Science Magazine*. Spoke to a group of financial investors about the scientific benefits of their donations at the February 2015 Astronomy Board of Visitors Meeting.

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, but with a range of appraised values. Regressed expected property values to prove that my tax burden was 7% above both the neighborhood 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.

Technical Skills

Mastered mid to senior-level programming with C/C++, Fortran, Java, and Python (10+ years). Optimized parallel numerical algorithms in supercomputer and cloud environments using MPI/OpenMP and GPU-enhanced MKL (8+ years). Experienced with Python SciPy (Numpy, Matplotlib, Pandas, Scikit-learn, 4+ years) and deep learning tools (Keras, TensorFlow, OpenCV, 6+ months). Administrated Linux servers on the cloud (e.g. AWS), as well as network and security administrator roles (15+ years). Developed numerous web-based projects using HTML, CSS, Javascript, PHP, and SQL (15+ years), as well as popular web frameworks (Node.js, jQuery, AngularJS, React, 2+ years).

Education

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

Dual Bachelor of Science in Physics and Astronomy **December 2012**
The University of Texas at Austin