Alex **Fitts, Ph.D.**

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EDUCATION

Ph.D. Astronomy, The University of Texas at Austin, 2018
M. A. Astronomy, The University of Maryland, 2014
B.S. Physics, The University of Connecticut, 2012

SKILLS

- Over 6 years of experience working in a distributed high-performance computing environment, managing large data volumes to conduct cutting-edge scientific research
- Expert in Python and the Python data stack
- Proficient in UNIX shell scripting, C, Git version control, and distributed computing frameworks such as OpenMP, MPI, and MPI4py
- Proficient in Pytorch and Fastai deep learning Python packages, as well as Scikit-learn
- Experience with Random Forests, Neural Networks (CNN, Siamese) and logistic regression.
- Working knowledge of SQL, R, Hadoop, and Spark

EXPERIENCE

Freelance Data Scientist - (*Dec. 2018*)

- Utilized an autoencoder neural network in the unsupervised learning task of anomaly and threat detection in unlabeled network traffic data.
- Trained a CNN to crop and standardize a heterogeneous collection of images and employed a Siamese NN in a one-shot learning task of identifying individual whales by their tails.
- Used Random Forests on structured data of real estate listings to predict expected sale price. Utilized unsupervised learning (hierarchical clustering) to remove redundant features.

Postdoctoral Research Fellow - (*Sept. 2018 – Dec. 2018) – University of Texas at Austin*

- Generated a specialized dataset from raw simulation data. Applied unsupervised learning algorithm (k-nearest neighbors) to dataset in an attempt to identify past galaxy mergers in phase space.
- Supervised and instructed two undergraduate students in parallelized analysis on distributed computing resources.

Graduate Research Assistant - *(Sept. 2014 – Sept. 2018) – University of Texas at Austin*

- Managed entire research project from start-up to close-out including: writing proposals, identifying and achieving production milestones, publishing the final product in a high-impact scientific journal, and presenting findings to varied audiences.
- Performed extensive exploratory analysis of multi-terabyte datasets using the Python data stack, particularly Numpy, Scipy, pandas, and h5py. Constructed parallelized analysis tools and data handling in Python across 2000+ computer processes using MPI.
- Designed explanatory visualizations using tools such as Matplotlib and Jupyter Notebook.
- Participated in a large (20+ person) international collaboration that involved presenting findings and formulating roadmaps in bi-weekly virtual meetings along with independent code and paper reviews.
- Authored four peer-reviewed publications in prominent scientific journals. Presented findings in numerous public and professional talks.

Graduate Teaching Assistant - (*Sept. 2012 – Sept. 2014*) – *University of Maryland*

- Taught astronomy to undergraduate students with varying technical backgrounds.
- Led team of Teaching Assistants and received Distinguished TA award.