Austen Gabrielpillai

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WORK EXPERIENCE

Research Assistant | NASA Goddard Space Flight Center   Nov. 2020 – Present
CRESST II – Catholic University of America   Greenbelt, MD
• Working with Drs. James Rhoads and Sangeeta Malhorta on Roman Space Telescope preparations
• Developing a grism simulation pipeline using a realistic foreground image in Python
• Optimizing and parallelizing code for running on high-performance computing clusters

Independent Researcher   Sep. 2020 - Present
Freelance   Monmouth Jct., NJ
• Working with Dr. Rachel Somerville as an external collaborator on galaxy evolution research
• Comparing merger tree histories between similar galaxies in two different simulations
• Converted ASCII datasets into hdf5 using numpy and h5py with a Python post-processing pipeline
• Developed a Python module for querying and loading partitions of a 1 TB simulation suite

Research Analyst | Simons Foundation   Jul. 2018 – Aug. 2020
Galaxy Formation – Center for Computational Astrophysics   New York, NY
• Worked with Drs. Somerville & Shy Genel on research applying galaxy simulation techniques
• Led 14-month project using Python to compare two cosmological model outputs at redshift $z = 0$
• Created framework for verifying algorithms using pandas, yt, and matplotlib in Jupyter Notebooks
• Increased accessibility of IllustrisTNG by using new algorithms to generate a series of catalogs
• Improved scalability of existing plotting processes by writing custom functions using matplotlib
• Applied expanded knowledge of C to convert binary outputs to an ascii file format
• Created a browser tool that enables real-time transformations of over 4 million simulated galaxies
  using Three.js and D3.js graphics on top of a Flask backend
• Added the ability to manipulate, visualize, and share data subsets on astrosims.flatironinstitute.org with
  Highcharts.js plots, URL querying, and a Python generation tool

EDUCATION

Rutgers University – New Brunswick, New Brunswick, NJ   Aug. 2018 – May 2020
Master of Information | Data Science Concentration

University of Illinois at Urbana-Champaign, Urbana, IL   Aug. 2013 – May 2017
B.S. in Engineering Physics | Computer Science Concentration

TECHNICAL PROFICIENCIES

Programming	Python, JavaScript, Bash, TypeScript, HTML & CSS, R, C, C++, LaTeX
Software	Jupyter, GitHub, Microsoft Office, OriginLab, Eclipse, Tableau