MEGAN **TABBUTT**

Madison, WI, USA · 608-630-7075

Megan.Tabbutt@gmail · linkedIn: MeganTabbutt22 · mtabbutt.github.io

Highly analytical individual with strong interpersonal and leadership skills as well as a passion for data science. Currently completing an M.S. in Computer Science and a Ph.D. in Physics. Looking to expand on a demonstrated history of software development and data analysis as a career. Skilled in programming, mathematics, statistics, and problem solving.

SKILLS

- Strong critical thinking
- Advanced math knowledge
- Excellent collaborator
- Enthusiastic problem solver
- Main languages: Python, Java
- Auxiliary: R, BASH, HTML, SQL
- Matplotlib, Pandas, SKLearn
- Tableau, Microsoft Office
- Machine Learning methods
- Artificial Intelligence
- Data Visualization
- Data driven solutions

EXPERIENCE

SOFTWARE DEVELOPMENT

- Co-leading the synthetic source injection software team (Balrog) of ~10 people while upgrading the pipeline to include injection of real galaxies which is used as a calibration and diagnostic framework.
- Combined Balrog with 100+ TB of astronomical data from The Dark Energy Survey (DES) and telescope, as a team of 200+, and have made the most precise measurement of dark energy to date.
- Created a transit network analyzer in a team of four (SCanalyzer) to evaluate current metro transit systems and possible changes based on geographical data, US census results, and city infrastructure.

DATA SCIENCE AND ANALYSIS

- Utilized large data, 50+ GB of real and synthetic galaxies, and statistical models to validate the systematics scheme utilized in the cutting-edge measurement of dark energy and dark matter by DES.
- Applied dynamic programming algorithms, tree-based algorithms, Hidden Markov Models, clustering, and Bayesian network models to computational problems in molecular biology in a class setting.
- Completed several artificial intelligence projects including using Gaussian Mixture Models to analyze socio-economic clustering and training a neural network to discriminate between handwritten digits.
- Worked in a team of four to review the socio-economic distribution of Madison metro bus resources, specifically exploiting the US census and GTFS data resulting in pulished findings as well as clear suggestions for improvements.

EDUCATION

University of Wisconsin – Madison

Awards: National Defense Science and Engineering Graduate Fellowship, and Hirschfelder Fellowship

Ph.D. Physics **2023**
Balrog: A Synthetic Source Injection Software

M.S. Computer Science **2022**
Focus: Data Science & Machine Learning, GPA: 3.91

M.A. Physics **2021**
Minor: Computer Science, GPA: 3.78

B.S. Honors Physics, Astrophysics **2018**
Minor: Math, graduated with distinction, GPA 3.83, Phi Beta Kappa honor society