

# RUTUJA GURAV

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EDUCATION	<p><b>Ph. D. Computer Science</b>, University of California, Riverside USA 2019 - present <i>Research Areas: AI for Science (Gravitational-wave Astronomy, Precision Agriculture, Multi-modal Geospatial Analysis), Foundation Models, Data Mining, Machine Learning, Deep Learning</i></p> <p><b>M.S. Computer Science</b>, University of California, Riverside USA 2017 - 2019</p> <p><b>B.E. Computer Engineering</b>, University of Mumbai, India 2013 - 2017</p>
RESEARCH EXPERIENCE	<p><b>University of California, Riverside</b> <i>Graduate Student Researcher, M.S. &amp; Ph.D.</i></p> <p><b>LIGO Scientific Collaboration, Caltech</b> <i>Visiting Student Researcher</i> Focus: Machine Learning for noise hunting in Advanced LIGO detectors.</p>
WORK EXPERIENCE	<p><b>Frontier Development Lab (FDL)</b>, a public-private partnership between <b>NASA, Google</b> and <b>NVIDIA</b> <i>Researcher</i> June – August 2024 Project: Forecasting radiation exposure for human spaceflight with multi-modal deep learning</p> <p><b>Lawrence Livermore National Lab (LLNL)</b> <i>Graduate Summer Research Intern (Team: Data Science &amp; Analytics Group)</i> June - September 2022 Project: Modeled multi-scale, multi-physics simulations using Graph Neural Networks (GNNs). <i>Team Lead: Data Science Challenge</i> September 2021 Task: Led a group of undergraduate students to build machine learning models for - 1. classifying stars and galaxies using HSC images from the Subaru Telescope in Hawaii, 2. detecting asteroids in images from ZTF astronomical survey.</p> <p><b>Oak Ridge National Lab (ORNL)</b> <i>Graduate Summer Research Intern (Team: Geoinformatics Engineering)</i> June - August 2021 Project: Conflation of Geospatial POI Data and Ground-level Imagery via Link Prediction on Joint Semantic Graphs.</p> <p><b>Esri Inc.</b> <i>Data Science Intern (Team: GeoAI)</i> June - August 2018 Project: Water mains breaks prediction using historic pipe records to forecast future breaks in water supply pipelines to aid risk assessment and maintenance.</p>
TECHNICAL SKILLS	<p>Programming Languages &amp; Software - Python (proficient); C/C++, Java, MATLAB (intermediate)</p> <p>Machine Learning - Numpy, Scipy, Pandas, Scikit-Learn</p> <p>Deep Learning - PyTorch / Lightning, Tensorflow / Keras</p> <p>Tensor Analysis - Tensorly (Python); Tensor Toolbox (MATLAB)</p> <p>Collaboration &amp; Experiments Tracking - Git / Google Colab, Weight &amp; Biases / Tensorboard</p> <p>Cloud Computing Platforms - Google Cloud Platform (GCP)</p>
SELECTED PUBLICATIONS	<p>Gurav, R., Papalexakis, E. E., Vajente, G., Richardson, J., &amp; Barish, B. (2022, October). Identifying Witnesses to Noise Transients in Ground-based Gravitational-wave Observations using Auxiliary Channels with Matrix and Tensor Factorization Techniques. In NeurIPS 2022 AI for Science: Progress and Promises. <b>(AI for Gravitational-wave Astronomy)</b></p> <p>Gurav, R., et al. (2023). Can SAM recognize crops? Quantifying the zero-shot performance of a semantic segmentation foundation model on generating crop-type maps using satellite imagery for precision agriculture. In NeurIPS 2023 AI for Scientific Discovery: From Theory to Practice. <b>(AI for Precision Agriculture)</b></p> <p>Gurav, R., De, D., Thakur, G., &amp; Fan, J. (2021, November). Conflation of geospatial POI data and ground-level imagery via link prediction on joint semantic graph. In Proceedings of the 4th ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery (pp. 5-8). <b>(AI for Multi-modal Geospatial Analysis)</b></p>
PATENT	<p>Conflation of geospatial points of interest and ground-level imagery, US12008800, 2024/6/11</p>
CERTIFICATES	<p><b>Generative AI (GenAI) with Large Language Models (LLM)</b>, DeepLearning.AI May 16, 2024</p> <p><b>How do Diffusion Models Work</b>, DeepLearning.AI November 26, 2024</p>