

Sachin Venkatesh Thakku Saravana

skumar680@gatech.edu | Google Scholar | Website

Education

Georgia Institute of Technology

PhD in Physics (Advisor : Matthew Liska)

MS Physics

MS Computational Science and Engineering

anticipated 2028

anticipated May 2025

anticipated May 2025

Delhi Technological University

Bachelor of Technology in Engineering Physics

May 2022

Publications

Shubham Bhardwaj, Maria G Dainotti, **Sachin Venkatesh**, Aditya Narendra et al. (2023). '**GRB optical and X-ray plateau properties classifier using unsupervised machine learning**' MNRAS, Volume 525, Issue 4, November 2023, Pages 5204-5223

Sachin Venkatesh and Gaurav Pundir (2022). '**PERISTOLE: Package That Generates Time Delay Plots Caused by Gravitational Lensing**' Res. Notes AAS 6 255

Sachin Venkatesh, Pratyush Bhatt et al. (2021). 'A comparative study of various Deep Learning techniques for spatio-temporal Super-Resolution reconstruction of Forced Isotropic Turbulent flows', IMECE2021-69923

Work Experience

Graduate Researcher

Sept'23 - Present

Georgia Institute of Technology

- Developing ML-assisted Adaptive Mesh Refinement module for H-AMR to increase simulation resolution and reduce computational time (Advised by Dr. Matthew Liska)
- Developing AI model to determine optimal boundary conditions

Research Intern

May'22 - Aug'23

National Astronomical Observatory of Japan

- Clustering Gamma-Ray Bursts on the basis of prompt parameters using Gaussian Mixture Model and Bayesian Information Criterion (Advised by Dr. Maria Dainotti)

Data Engineer

July'22 - June'23

Genpact

- Deployed as a Data Engineer (+ Fullstack) focusing on big data and scalable datalakes for high density businesses and processes using Snowflake, SQL and PySpark

Project Student

May'21 - Aug'21

Center for Computational Astrophysics

- Studied dark matter halos and their properties using IllustrisTNG. Explored ML algorithms and their limitations on merger trees to detect self-similarity across branches (Advisor - Dr. Aaron Yung)

Student Researcher - Fluid Mechanics Group

Feb'21 - May'22

Delhi Technological University

- Developed and compared various super-resolution algorithms to reconstruct high-fidelity turbulent flow data from low resolution data under Dr. Raj Kumar Singh

Student Researcher

May'20 - Jan'21

Indian Institute of Astrophysics

- Modeling dust scattering and halos using GALEX data : Explored the evolution and nucleosynthesis of O and B type stars, the effect of cosmic dust on scattering and star formation rates under Dr. Jayant Murthy

Teaching Experience

Intro Physics II (Phys2212)

Fall'23, Spring'24, Summer'24

- TA'ed 150 undergrads for a calculus-based course with labs covering electromagnetism and it's applications

Skills

- **Languages:** Python, R, SQL, Teradata, Snowflake, Flask, IDL/GDL, C++
- **Platforms:** Linux, Windows, HPC, CUDA
- **Software:** LaTeX, SAO-DS9, Git, COMSOL, MATLAB

Awards and Honors

Honorable Mention by ASME for work in 'Applied ML' presented at IMECE	2022
Delhi University IoE grant for establishing radio astronomy lab (INR 800,000)	2022
Special mention by DeepAI for novel work in super-resolution	2021
Scipy and PyData Global Impact scholar	2021, 2022

Talks and Posters

Deep Learning techniques for spatio-temporal Super-Resolution reconstruction [Talk]

International Mechanical Engineering Congress & Exposition, ASME Nov'21

Measure of biases in higher order precessing waveforms [Poster]

NANOGrav Fall science meeting Oct'21

Conferences and Workshops

- **Code/Astro - Astronomy software development**, Northwestern University [TA] July'24
 - Mentored 2 different groups on creating an astronomy related python package
 - In-person TA for the workshop, taught students parallel programming
- **IAU symposium 377 conference and monsoon school** Feb'23
 - Selected for monsoon school on Early Disk-Galaxy Formation
- **Code/Astro - Astronomy software development**, Caltech June'22
 - Developed a package called PERISTOLE [10.5281/zenodo.6744000](https://doi.org/10.5281/zenodo.6744000)
- **European Astronomical Society Annual Meeting 2021 [Volunteer]** July'21
- **ESCAPE Summer School on Data Science**, ESFRI June'21
- **IV Joint ICTP-Trieste/ICTP-SAIIR School on Cosmology** Jan'21