

DR. SRASHTI GOYAL

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Physics PhD with 7+ years of experience in machine learning, Bayesian statistics, computational modelling, scalable data pipelines and interdisciplinary research. Proven record of delivering production-ready ML tools and impactful scientific contributions. Passionate about solving challenging real-world problems.

EDUCATION

BS-MS Dual Degree in Physics at IISER-K

Indian Institute of Science Education & Research, Kolkata

📅 Aug 2013 – June 2018

📍 Kolkata, India

- Master's Thesis: Numerical modelling of emergent wave-like patterns encapsulating a complex network of biological reaction diffusion systems. Simulating non-linear PDEs.

PROFESSIONAL EXPERIENCE

Research Scientist in Astrophysics

Max Planck Institute for Gravitational Physics

📅 Oct 2023 – Ongoing

📍 Potsdam, Germany

- Contributed to GLoW, advanced numerical algorithms of diffraction lensing. [Code](#), [Publication](#)
- **Forecast detection probabilities of diffraction effects** for the upcoming space-based gravitational wave detector, called LISA, using **distributed computing**.
- Improved the accuracy of an existing Bayesian method to identify strongly lensed signals by 80%. [Publication](#)

PhD in Physics on Gravitational-wave Astronomy

International Center for Theoretical Sciences,
Tata Institute of Fundamental Research (ICTS-TIFR)

📅 Aug 2018 - Sep 2023

📍 Bengaluru, India

LIGO Scientific Collaboration (LSC)

📅 Oct 2020 – Ongoing

📍 Remote - worldwide

- Pioneered a **ML algorithm using CNNs**, achieving 1000x faster compared to Bayesian methods for identification of rare repeated signals, due to gravitational lensing, from merging black-holes. Deployed it for real-time analysis, found the most significant candidate out of 5K+ events. [Code](#), [Publication](#)
- Developed **Bayesian hypothesis testing** to rule out alternative gravity theories against Einstein's theory of relativity using the observed time series data. [Code](#), [Publication](#)
- **Proposed a mathematical model of COVID-19** disease spread and various intervention strategies for different countries with **time-series data analysis**, voluntarily. [Code](#), [Publication](#)

SKILLS

Technical Stack

Python

C

MATLAB

SQL

TensorFlow

Scikit-learn

OpenMP

GPU

LaTeX

Scipy

Pandas

Data Science Expertise

Bayesian Inference

Deep Learning

Computer Vision

Statistical Modeling

Distributed Computing

Tools

Gitlab CI/CD

Slurm

Condor

Docker

Jupyter

ACHIEVEMENTS



12+ Journal Articles

🆔 0000-0002-4225-010X



2+ Open-source codes in
LIGO GitLab

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15+ Conferences, 6+ Talks,
4+ Mentees
across Australia, UK, EU, India.



Max Planck Fellow

for post-doctoral research in
Germany.



99.5 percentile in JEE 2013
and JEST 2018

Top ranker in competitive entrance exams.



DST-Inspire Fellow

for Undergraduate Science
Research by Govt. of India.