Manas Vishal

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# EDUCATION

## University of Massachusetts Dartmouth

## PhD, Computational Sciences and Engineering (Theoretical Physics) Expected May 2025

Award: Distinguished Doctoral Fellowship | GPA: 4.0

## Indian Institute of Science Education and Research Kolkata

## Bachelor and Master of Science, Physics June 2021

Award: Merit-based scholarship | GPA: 3.5

Relevant coursework: Linear algebra, Statistics, Mathematical Modeling, Data Mining, Machine Learning,

Numerical Methods and Algorithms, Computational Physics, High Performance Computing

**EXPERIENCE**

**Center for Scientific Computing and Data Science Research,** UMass Dartmouth

***Research Assistant*  Sep 2021 - Present**

* Formulated a robust mathematical model to simulate astrophysical binaries.
* Developed a codebase with new algorithm from scratch for numerical simulations of astrophysical binaries using high performance mathematical models.
* Prototype MATLAB code runs 90 times faster and 108 times more accurate than current state of art
* Assisting junior researchers to develop quantitative and analytical skills for black holes simulations.

**Albert Einstein Institute,** Max Planck Institute of Gravitational Physics, Potsdam, Germany

***Data Scientist*  Jun 2023 – Jul 2023**

* Accelerated the simulation time of binary black holes using a data driven approach
* Analyzed time series datasets in frequency domain for a faster and efficient surrogate approach.

**NSF Careers,** Yale Center for Resea​rch Computing

***High Performance Computing Student Facilitator* May 2023 – Jun 2023**

* Translated a prototype MATLAB code to an efficient C++ codebase
* Benchmarked C++ codebase across multiple platforms.
* Implemented unit and regression tests to the codebase

**Numerical Relativity Summer School,** ICERM, Brown University, Providence, Rhode Island

***Python Programmer and Data Analyst* Aug 2022**

* Analyzed the time series data to extract relevant physics information
* Won the first prize for visualizing the volumetric data as AR/VR simulation using python modules.

# PUBLICATIONS and PRESENTATIONS

* First author paper on highly efficient simulation of astrophysical objects (<https://arxiv.org/abs/2307.01349>) [with referee]
* Invited talk at MIT on September 11, 2023
* Invited talk at Infinity on a Gridshell workshop held in Copenhagen, Denmark
* Presented my research on astrophysics simulations at Albert Einstein Institute in Potsdam, Germany

# AWARDS

## Distinguished Doctoral Fellowship

## University of Massachusetts Dartmouth Sep 2021

Highest fellowship offered to only 10 students by UMass Dartmouth that aided my doctoral research in black hole physics

## Kishore Vaigyanik Protsahan Yojna Fellowship

## Government of India Aug 2017

Fellowship granted to top 1% nationally of highly motivated and skilled students to pursue a career in pure sciences

## Inspire Award,

## Department of Science and Technology, India Aug 2016

Scholarship to continue a career in basic sciences

# SKILLS

**Programming Languages**: Proficient in Python, C, C++, R, HTML & TeX and Intermediate in Julia, SQL & PHP

**Computer Software**: MATLAB, Mathematica, Origin, Gnuplot, ImageJ, LaTeX, Android Studio

# LEADERSHIP EXPERIENCE

* Organized the first ever hackathon of University of Massachusetts Dartmouth on April 13, 2024.
* Led the multimedia and web technology team of Inquivesta, the largest science fest of India. Moreover, developed the android application for the event that handled transactions.