

# Pritipriya Dasbehera

Bhubaneswar, India

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## Education

### National Institute of Science Education and Research

Bhubaneswar, India

Integrated Masters in Physical Science

October 2021 - Present

- Minor in Computer Sciences
- Current GPA: 9.48
- **Physics Coursework:**  
Quantum Field Theory, Many-body physics, Condensed Matter, Statistical Mechanics, Classical Mechanics
- **Computer Science:**  
Graph Theory and Algorithm Design, Machine Learning, Complexity Theory, Parameterized algorithms
- **Relevant Lab Courses:**  
Basic and Advanced Electronics, Optics, Computational, Nuclear Physics, Solid State

### Kendriya Vidyalaya Balasore

Odisha, India

Middle and High School

August 2011 - May 2021

- CBSE board class 12th - 96.8 %
- CBSE board class 10th - 98 %

## Work Experience

### National Institute of Science Education and Research

Bhubaneswar, India

Pre-thesis project | Quantum Many-body Dynamics

Apr 2024 - Ongoing

- Under the supervision of Dr. Anamitra Mukherjee
- Application of network theory to classify states of the exponentially large fork space
- Low rank inversion technique for Greens function computation

### MathePhysics

Online

Summer internship | Biophysics

June 2024 - Aug 2024

- Under the supervision of Akshunna S. Dogra and Dr. William T. Redman
- Distance information from the variability of grid cell parameters

### Inter-University Acceleration Centre

New Delhi, India

Summer internship | Accelerator Physics

June 2023 - July 2023

- Under the supervision of Dr. Rajesh Vikram Hariwal
- Investigations on Meta-materials for Beam Diagnostics Application

### National Institute of Science Education and Research

Bhubaneswar, India

Summer internship | Computational Astronomy

May 2022 - July 2022

- Under the supervision of Dr. Nishikanta Khandai
- Study and implement brute force and Nearest Grid Point algorithm to find the Nearest Neighbors under Periodic Boundary Conditions and compare their time complexities.

## University Projects

### Anderson Impurity Problem

Bhubaneswar

Many-particle Physics course | Report

Aug 2024 - Nov 2024

- Under the supervision of Dr. Anamitra Mukherjee
- Study of dynamics of electrons in metal doped with impurities
- Different Born approximations and Feynman diagrams

### Secure communication with Chua circuit

Bhubaneswar

NISER Open-Lab

Aug 2024 - Nov 2024

- Design and analysis of Chua circuit and study of the non-linear element constructed using op-amp as negative resistance
- Synchronization of two Chua circuits and study of its stability for different parameter values
- Use of synchronization to securely transmit digital and analog information by using chaos to encode information

### Machine learning for wavefunction dynamics

Odisha, India

ML course | GitHub-repo

Jan-March 2024

- Reconstruction and prediction of the probability density of a quantum system using PINN and regression
- Report can be found here

## Quantum Neural Network

NISER | Computational Physics Course

Bhubaneswar

Aug 2023 - Oct 2023

- Building a Image classifier algorithm with classic Convolutional Neural Network and a linear quantum layer
- Implementation of forward and backward pass on a quantum layer

## Experimental verification of the Einstein-de Haas effect

Odisha, India

National Anveshika Experimental Skill Test

June 2023

Einstein-de Haas effect is a physical phenomenon in which a change in the magnetic moment of a free body causes the body to rotate following conservation of angular momentum.

## Skills

**Programming** Python(Pandas, Tensorflow, PyTorch, NumPy, Scipy) Rust, C, C++, Julia

**Miscellaneous**  $\text{\LaTeX}$ , Linux CLI, Vim

**Soft Skills** Critical thinking, Adaptability, Teamwork, Openness to criticism

## Highlights

2024	<b>Gold medal in Sixth semester</b> , Academic	NISER
2024	<b>Gold medal in Fifth semester</b> , Academic	NISER
2024	<b>Vice-President</b> , Robotech Club	NISER
2024	<b>Certificate of Appreciation</b> , OPEN DAY (University Outreach)	NISER
2023	<b>Internship Talk</b> , Metamaterials for accelerator physics	IUAC, Delhi, India
2023	<b>Cleared Prelims</b> , National Anveshika Experiment Skill Test(NAEST)	India
2022	<b>Gold medal in Second semester</b> , Academic	NISER
2022	<b>Gold Medal in First semester</b> , Academic	NISER
2022	<b>Second position in Inquizitive Physics Quiz</b> , IGNITE	NISER
2022	<b>First position in Vigyan Vyakhya(Sci-Video) competition</b> , IGNITE	NISER
2021	<b>Inspire Scholar</b> , Department of Science and Technology	India

## Interests

<b>Robotics</b>	Interested in bringing textbook physics and programming to life through robotics
<b>Stargazing</b>	Occasionally find myself strolling alone enjoying the night sky
<b>Reading</b>	Have always loved reading; thriller, mystery and bleak fiction
<b>Sci. Comm.</b>	Regularly promote physics as a basic science to school students by showcasing interesting science experiments.

## Languages

<b>English</b>	Professional proficiency
<b>Odia</b>	Native proficiency
<b>Hindi</b>	Conversational proficiency

Transcript, Certificates available here

[https://drive.google.com/drive/folders/1jhlRAs\\_5fv7khFHxLVhfSZNysKI6q\\_81](https://drive.google.com/drive/folders/1jhlRAs_5fv7khFHxLVhfSZNysKI6q_81)