ARITRA MUKHOPADHYAY

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ABOUT ME

I am a **Physics Major** student (Int. MSc.) at the **National Institute of Science Education and Research** (NISER). Besides my passion for Physics, I have a keen interest in **Robotics and Technology**. As a **self-taught programmer**, my focus has evolved to encompass research and application of **Machine Learning**, **Deep Learning**, and **Image Processing**. Currently, I am engaged in the Microsoft Academic Partnership Grant (MAPG) and collaborating with Microsoft to leverage my skills.

PAST PROJECTS & ACHIEVEMENTS

Quantum Computation Internship

Prof. Prasanta K. Panigrahi

June 2022 – July 2022 | IISER Kolkata

Internship Report: **Quantum Robot**

PyaR Seminar 2021

Prof. Raja GuhaThakurata

July 29th to 31st, 2021 | Online

GitHub Repository (materials): **PeithonKing/PyaR-2021**

Quantum Computation Course

IISER Tirupati & Qkrishi

2022 Summer Break | Online

GitHub Repository: **PeithonKing/Attacking_QKD_Protocols**

Building a Drone

RoboTech Club, NISER

June – July 2021 | NISER

We built an autonomous drone with funding from the RoboTech Club of NISER.

Machine Learning Internship

Prof. Kripabandhu Ghosh

Dec 2021 - Jul 2022 | IISER Kolkata

GitHub Repository: **PeithonKing/AILA**

"Start by doing what's necessary; then do what's possible; and suddenly you are doing the impossible!"

MOST PROUD OF

Microsoft Academic Partnership Grant (MAPG) 2023
July 2023 - June 2024

Paper on ML
Dec 2022

Came 1st in ML4SCI Hackathon
Nov 2021 - Jan 2022

CURRENTLY WORKING ON

Improvement on the Quaternion-based models: extension to larger datasets and Batch Normalization

I am addressing the shortcomings of earlier research on the lottery ticket hypothesis for quaternion-based models as part of my term project for the CS460 ML Course. Even while earlier work had success with smaller models and datasets, it had difficulties with batch normalisation code that ran slowly and didn't test bigger datasets and models. In order to overcome these restrictions and develop the field of quaternion based models, I am concentrated on increasing the efficiency of Batch Normalization to enable trials with bigger data sets and models.

GitHub Repository: **smlab-niser/quatLT23**

PUBLICATIONS

Conference Proceedings

- A. Mukhopadhyay, A. A, and S. Mishra, "Large neural networks at a fraction," in *Northern Lights Deep Learning Conference 2024*, 2023. [Online]. Available: https://openreview.net/forum?id=xVbMj75YDD.

Came 1st in ML4SCI Hackathon (Higgs Challenge)

ourselves

Nov 2021 – Jan 2022 Online

GitHub Repository: **PeithonKing/ML_comp**