ABHIJIT CHAKRABORTY

Postdoctoral Fellow in Quantum Computing

Kitchener, ON, N2H 0C7, Canada
abhijit.iiserk@gmail.com
+1 (519) 502-5055
www.linkedin.com/in/abhijit-chakraborty-uh

EXPERIENCE

Institute for Quantum Computing, Waterloo, ON, Canada 2022 – Present
Postdoctoral Research Fellow

- Implemented a large language model (transformer) of deep neural network using PyTorch to learn quantum states with > 99% accuracy and predict quantum observables.
- Developed a quantum algorithm using Qiskit and python libraries to find thermal states of gauge theories using variational quantum methods and classical optimization with > 75% accuracy.
- Deployed Monte Carlo and physics informed machine learning models to solve ordinary and partial differential equations with > 90% accuracy using C++ and TensorFlow, respectively.
- Demonstrated adaptability and flexibility in a fast-paced research environment, effectively contributing to 2 novel research ideas within 6 months of joining in a new field of study.
- Supervised 2 undergraduate and 1 Masters' student, fostering analytical thinking, and providing collaborative learning environment.

University of Houston, Houston, TX, USA 2017 – 2022
Graduate Research Assistant

- Created a dynamical systems-based method to assign synaptic weights in a cortical neural network to produce balanced but correlated firing dynamics improving upon a 10-year-old result.
- Headed 3 projects focused on employing an analytical quantum optics approach to investigate black hole physics, leading to the publication of 6 research papers.
- Demonstrated strong written and verbal communication skills through 6 conference presentations, 3 invited talks, 8 publications, and managing research collaboration with 3 institutes.
- Co-wrote a grant proposal, which received funding worth $100,000.
- Achieved top 25% rankings in three machine learning challenges on Kaggle by leveraging the scikit-learn library in Python to implement the random forest, logistic regression, and k-means clustering algorithms.
- Attained the highest grade in a computational physics course encompassing molecular dynamics and Monte Carlo simulations of stochastic systems and DFT simulations of hydrogen and helium molecules.
- Implemented hands-on teaching methods to engage students and promote understanding of physics experiments for 8 semesters, achieving a grade of 4.5/5, 14% higher than the department average.
- Instructed 1 undergraduate and 2 graduate students in the group, leading to a productive collaboration.
- Awarded three prizes totaling $1500 for outstanding skill in effectively communicating research findings to audiences outside of the research area.

SKILLS

Machine Learning: Scikit-learn, TensorFlow, PyTorch, Deep Neural Networks (CNN and RNN), Logistic and Linear Regression, Clustering, Random Forest, Decision trees, PCA.
Data Analysis: Pandas, Seaborn, Jupyter, Python, Exploratory Data Analysis, Statistics, SQL.
Other Tools: LaTeX, Mathematica, GitHub, Qiskit, C++.

VOLUNTARY EXPERIENCE

Sci-ROI Global, *Social Media Manager* 2022 – 2023

- Promoted events on the official twitter account of Sci-ROI Global (2k followers), a networking platform for the Indian academic diaspora.
- Orchestrated an online academic recruitment drive that attracted > 700 applicants and involved the active participation of 35 Indian universities.

Education

Ph.D. in Quantum Physics, *University of Houston (UH)*, Houston, TX. 2017 – 2022
BS-MS Dual Degree in Physics, *IISER Kolkata*, India. 2012 – 2017