Dhanvi Bharadwaj

608-556-1172 | dhanvibharad@gmail.com | d-bharadwaj.github.io/website | github.com/d-bharadwaj | linkedin.com/in/d-bharadwaj

Education & Honors

University of Wisconsin-Madison
Bachelor of Science in Physics, Minor in Data Science — Sept. 2020 – May 2024
- **Cumulative GPA**: 3.93/4.00, Dean's List
- Hilldale Research Fellowship for undergraduate research

Relevant Coursework: Machine Learning, Data Structures, Object-Oriented Programming, Statistics for Data Science, Linear Algebra, Data Visualization, Computational Physics

Technical Skills

Languages: Python, SQL, R, C++, HTML, MATLAB
Libraries: Pandas, NumPy, Matplotlib, Scikit-learn, PyTorch, SciPy, Flask, dplyr, ggplot2
Software: Jupyter, Git, Linux, Power BI, Google Cloud (GCP), Excel, Photoshop
Conferences & Hackathons: QTML 2023 (Paper Submitted), unitaryHACK 2023 (Open-Source Contributions), MIT iQuHACK 2023, CQN Winter School 2023: Quantum Networks, IBM Qiskit Summer School 2022 (Quantum Excellence Certification)

Professional Experience

Quantum Machine Learning Intern — May 2023 – Present
Oak Ridge National Laboratory — Oak Ridge, TN
- Developed and implemented Quantum Machine Learning models using Pennylane and Qiskit frameworks, focusing on 2-6 qubits to assess predictive capabilities on highly multivariate and non-linear datasets
- Optimized fidelity and cross-entropy loss methods in models, to reduce loss function values by an average of 20%
- Utilized state-of-the-art techniques such as data re-uploading to solve limitations posed by the no-cloning theorem and enhance the performance of our quantum models by 30%
- Implemented and refined quantum circuit architectures such as SU(4) and IsingZZ coupling for multiclass classification tasks on imbalanced datasets

Undergraduate Researcher — Sept. 2020 – Present
UW-Madison Thevamaran Lab — Madison, WI
- Utilized Python to implement computational techniques to correct strain-overshoot in viscoelastic relaxation experiments, to help improve accuracy of dynamic moduli calculations
- Collaborated with researchers to execute data analysis using SciPy that identified an opportunity to reduce noise from resonance effect
- Presented results and insightful trends to researchers using Matplotlib/Power BI at weekly meetings

Peer Mentor Tutor — Sept. 2022 – Present
UW-Madison Physics Learning Center — Madison, WI
- Led dynamic and engaging collaborative learning sessions for over 50 students in university physics I and II, fostering a supportive and interactive environment conducive to effective learning
- Actively contributed to the continuous improvement of the Physics Learning Center by collaborating with fellow tutors and instructors to develop new educational resources and refine teaching methods

Projects

NBA MVP Predictor
- Programmed a machine learning model using Python and R to accurately predict 84% of all NBA MVPs including the 2021-22 season award winner
- Implemented powerful regression frameworks including Random Forest, LightGBM, and XGBoost, and utilized mutual information-based feature selection to improve model accuracy by 25%

Wisconsin Land Tracts Analysis
- Utilized Python to implement supervised machine learning techniques for predicting population in Wisconsin counties based on land features, with 95% accuracy
- Implemented a color-encoded map of different land features for each county in Wisconsin, incorporating rasterized data, shapefiles, and GeoDataFrames to construct detailed plots

Leadership & Involvement

Collegiate Quiz Bowl Competitor — September 2020 – Present
Wisconsin Quiz Bowl
- Led team to achieve top 5 ranking in North ACF Fall 2020 tournament among 25+ participating universities
- Increased student engagement by actively promoting the club's impact and opportunities during organization fairs, resulting in an increase in new member sign-ups.