

# Muhammad Usaid Rehman

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## Education

### University of Windsor

MSc. Computer Science

Research Focus: Cryptography & Computational Mathematics

Windsor, ON

*Aug 2022 – Dec 2023*

### Habib University

BSc. Computer Science, Minors: Mathematics & South Asian Music

Scholarship: 70% Excellence Scholarship awarded for A-Level results.

GRE Score: 318, TOEFL iBT: 112

Karachi, Pakistan

*Aug 2018 – May 2022*

## Experience

### Realtor Buddy

#### FrontEnd Developer (Contract)

(Remote)

*April 2024 – May 2024*

- Designed a user-interface/user-experience for a landing page (<https://www.realtor-buddy.com>) for a product meant for realtors in the United States.
- Wireframed user-interface for both desktop and mobile versions of the website via Figma.
- Developed complete front-end using React, incorporating best practices for long-term maintainability and helped implement subscription model and incorporating third-party API in both the backend and frontend to handle subscriptions.

### University of Windsor

#### Graduate Teaching Assistant

Windsor, ON

*Sep 2022 – Dec 2022*

- Assisted faculty with COMP 4150: Advanced and Practical Database Systems, and COMP 4670: Network Security.
- Designed, conducted and graded weekly labs, graded weekly assignments, quizzes, and exams in a timely manner and conducted regular office hours for individual instruction.
- Assisted with course organization, liaised with faculty and students, and proctored exams.

### World Wildlife Fund Pakistan

#### Machine Learning Intern

(Remote)

*Summer 2021*

- Co-developed a bird image recognition model as proof-of-concept for future ecology use.
- Scraped the internet using BeautifulSoup and also manually, to collect images of birds and implemented a data preprocessing pipeline to construct training and testing sets.
- Experimented with various Convolutional Neural Networks (CNNs), including ResNet50 to obtain 90% accuracy upon testing.

- Produced a final report detailing the model performance, deployment guide, and future enhancements.

**Habib University**

Karachi, Pakistan

**Teaching Assistant**

Sep 2020 – May 2022

- Worked as a teaching assistant for the courses CS 440: Design & Analysis of Algorithms, CS 212: Nature of Computation, CS 202: Engineering Mathematics, CS 102: Calculus II.
- Conducted weekly tutorials to revise concepts introduced in class.
- Graded quizzes, assignments and conducted office hours to provide individual assistance.

## Projects

### A Novel Approach to Protein Complex Identification via Ensemble Clustering

[GitHub]

Final Year Project for BSc. Computer Science at Habib University. Conducted an extensive literature review and implemented a novel clustering algorithm to detect protein complexes in an interaction network, using deep learning, genetic algorithms and graph-theoretical algorithms.

*Python, Numpy, Seaborn, Pytorch, L<sup>A</sup>T<sub>E</sub>X*

### MultiStage Optimization for Combinatorial Optimization Problems

[GitHub]

Worked on an independent research project in Summer 2021 under the guidance of Dr. Shahid Hussain to implement a chain of multistage optimization algorithms on matrix multiplication and other combinatorial problems. Implemented the algorithm in C++ and analyzed results empirically using Python.

*C++, Bash, Python, L<sup>A</sup>T<sub>E</sub>X*

### Agent-Based Modelling of Slime Mold

[GitHub]

Term project for CS 262: Computational Social Science. Implemented an agent-based-model of slime mold (*P. polycephalum*) in order to simulate its behavior. Conducted a statistical analysis of a number of simulations and submitted our findings in a report.

*NetLogo, Python, L<sup>A</sup>T<sub>E</sub>X*

## Skills & Interests

**Programming Languages:** Python (Numpy, multiple plotting libraries, and SageMath), JavaScript, TypeScript, C, C++, Bash, Prolog, R

**Web Development:** Frontend: React, Redux, Emotion, Flask, HTML, CSS; Backend: Django, Express, Node

**AI/ML & Data Science:** Scikit-learn, Pandas, TensorFlow, Pytorch, Plotly Dash

**Other Technical Skills:** Git/Github, testing via Mocha + Chai, Databases (MongoDB, PostgreSQL, MySQL), Linux, MATLAB, Maple, Octave, writing requirements & documentation.

**Theoretical Skills:** Design & Analysis of Algorithms, Natural Computing, Agent-Based Modelling, Theory of Computation, Cryptography, Pure Mathematics