# Muhammad Zubair Khan

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## EDUCATION

**University of California, San Diego** | BS Computer Science **Expected June 2023**
**GPA:** 3.95 / 4.00
**Related Coursework:** OOP in Java, Data Structures, Software Tools & Techniques Lab, Discrete Mathematics, Math for Algorithms & Systems, Computer Organization & Systems Programming, Research in CS
**Awards:** Provost Honors (Fall 2019 – Fall 2020), Shores Scholarship ($119,000), Haag Scholarship ($34,000)

## EXPERIENCE

**Machine Learning Research Intern** | Spatiotemporal ML Lab @ UCSD **October 2020 – Present**

- Working on an ML model which predicts if an NBA player will shoot within the next second
- The model takes in spatiotemporal data and uses Tensor Learning to make predictions
- Used NumPy and Pandas to develop Python scripts which pre-processed raw NBA data to fit our model
- Will use PyTorch to restructure existing Tensor Learning models to fit our model

**CS & Math Teaching Assistant** | Whales College **August 2018 – June 2019**

- Helped tutor and prepare students for GCE A-Level CS and Math exams at Whales College
- Identified struggling students and held voluntary extra hours for them

## PROJECTS

**Android Fitness App**

- Developing an Android app which makes it easy for users to choose or create a workout plan and track daily progress and other valuable info e.g. load progression, exercises, no. reps/sets etc.
- Coded the frontend & backend aspect of the app using XML & Java respectively in Android Studio
- Integrated the Spotify API to let users playback their Spotify playlists in-app
- Integrated Google Firebase Database to store app data e.g. pre-made workouts, users login info etc.

**Ngram Viewer**

- Built an Ngram Viewer in Java which visualizes usage of English phrases over time in historical texts
- Created two types of Databases, using HashMap and BST, to process a variety of queries efficiently
- Engineered a Loader Class to extract queried English phrases from the Database data
- Used the JFreeChart framework to plot the extracted English phrases' usage visually as line graphs

**File Compression Tool**

- Built a File Compression Tool for binary files in C++ in a Unix environment
- Implemented Huffman Encoding to compress data contained in file
- Devised a Bitwise I/O Stream to read and write individual bits to and from a file
- Leveraged Data Structures like Priority Queues and Maps for efficient runtime and space complexity

**1v1 Basketball Simulator**

- Developed a 1v1 Basketball Simulator in which the computer plays a 1v1 Basketball game with itself
- Made extensive use of Object-Oriented Programming to keep the code flexible and reusable
- Applied Coordinate Geometry concepts to determine the two players' movements on court.

## SKILLS

Java, Python, C++, ARM, XML, GDB, Firebase, Unix/Linux, Pandas, NumPy, PyTorch, Android Studio, REST APIs