

# Zain Manasia

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## EDUCATION

### Columbia University

New York, NY

*M.S. in Computer Science*

May 2023

- Relevant Courses: Intro to Databases, Machine Learning, Analysis of Algorithms

### University of Texas at San Antonio

San Antonio, TX

*B.S. in Physics*

Dec 2021

- GPA: 3.8
- Relevant Courses: Probability and Stochastic Processes, Deep Learning, Quantum Mechanics
- Honors: Deans List, Honors College Member

## TECHNICAL SKILLS

**Languages**: Python, R, C/C++/C#, MATLAB, HTML5/CSS, SQL

**Frameworks**: TensorFlow, Keras, OpenCV, Scikit-learn, Kafka, ROS

**Databases**: MySQL, PostgreSQL, MongoDB, Neo4j

**Other Tools and Skills**: GitHub, Google Cloud Services, Project Management, Process Optimization

## PROFESSIONAL EXPERIENCE

### University of Texas at San Antonio – Unmanned Systems Lab

San Antonio, TX

*Undergraduate Research Assistant*

Oct 2018 – Dec 2021

- Developed RL model to experiment with reward function optimization in Python and Tensorflow
- Trained model in Atari environments with 20,000 human preference-based pre-training data points
- Organized code to make modular and deployed to UTSA USL GitHub repository
- Mentored 2 undergraduate students and led weekly lab meetings to discuss new findings or developments
- Spearheaded lab receiving grant of \$500,000 from a government organization to further build project

### Dell Medical School – UT Austin

Austin, TX

*Algorithm Engineering Research Intern*

Aug 2020 – Dec 2020

- Explored various signal processing and classification methods for seizure detection with MATLAB and Python
- Achieved accuracy of 98.6% applying Hilbert transform with a kNN algorithm leveraging Scikit-learn
- Deployed optimizations to main algorithm codebase, employed by 15 neuroscience labs, utilizing CI/CD principles

## PROJECTS

### “Cryptocurrency Order Matching Engine”

Oct 2021

- Constructed a low-level order matching engine in C++ for Bitcoin transactions
- Integrated 3 clients communicating to server for BTC conversion from ETH, LTC, and XRP using Apache Kafka
- Maximized order matching efficiency to approximately 10,000 trades/second/market pair on a full traffic server

### “JalapeNew York”

Jan 2022

- Built a website for users to rate local restaurants on a 1-5 spicy scale with Python, Bootstrap, Flask, and PostgreSQL
- Connected web front-end to backend database to store input entities, implementing complex SQL queries
- Awarded best project in COMS 4111- Introduction to Databases course in a cohort of 30 groups
- Deployed website and received averaged 140 users per day for first week

### “Predicting Stock Prices for TSMC using a Multilayer Perceptron”

Mar 2021

- Analyzed closing value stocks from 2019 to 2021 to predict future stock prices, given previous 15 days of stocks and moving averages of the time series as an input for MLP model
- Implemented signal denoising for higher predictive accuracy utilizing Kalman filtering in R
- Determined an MLP with hidden layer of size 3 best predicted future stock pricing, with an MREP of 0.015

### “Stage-Aware Neural Network for Health Prediction”

Mar 2021

- Predicted decomposition risk of ICU patients due to COVID-19
- Implemented 3 different StageNet models using variations of LSTM, 1D Convolutional, and Linear Layers and received AUROC of 0.86 of MIMIC-III ICU data