# Quinn P. Murphey

*Developer / ML Engineer*

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## Profile

Self-driven developer with extensive studies in mathematics, logic, data science, machine learning, and linux systems programming who is exited to continue their learning at a new home. A well optimized and organized collaborator who strives for clean, documented, and testable code. Looking for a data science or machine learning adjacent developer position. Willing to relocate.

## Computer skills

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|---|---|---|---|
| Fluent | Python, LaTeX, NumPy, pandas, Keras, Tensorflow, Ubuntu, MacOS, Debian, Office 365 Apps, Jupyter | Skilled | Java, C, Linux, Bash, AWS, SageMath, Maven, matplotlib, MapReduce, SciPy, scikit-learn |
| Intermediate | C++, SQL, Flask, Django, HTML/CSS, Docker, Hadoop, Spark | Basic | MATLAB, R, JavaScript, pytorch |

## Education

2018–2022 **BSc. in Mathematics**, *University of Texas at San Antonio*, *3.81/4.0* Major GPA.
Concentration in Pure Mathematics

2020–2022 **BSc. in Computer Science**, *University of Texas at San Antonio*, *3.5/4.0* Major GPA.
Concentration in Data Science

## Projects

Spring 2022 **Using Variable Length Google Search Volume Time-Series to Predict Natural Gas Prices with LSTMs**, *Deep Learning*, UTSA.
Using historical economic data and Google Trends data, I developed a BiLSTM neural network in Tensorflow Keras to predict natural gas futures prices that outperformed all prior academic literature on the same dataset. (See Paper, Program, Model)

Fall 2019 **Course Projects**, *Graduate Advanced Number Theory*, UTSA.
Both midterms (1, 2) for this class were open-ended mathematical research papers based around a single question such as "What properties do the prime numbers satisfying $m^2 + mn + n^2$ for integers $m$ and $n$ have?". Additionally, I gave a 1 hour long chalkboard lecture over "A Generalized Class Number Formula" for my final project.

Fall 2021 **Time Series Predictions of Global Economic Indicators Using the IMF World Economic Overview Dataset**, *AI: Deep Learning and RNNs*, UTSA.
As a final project to a graduate math course over deep learning, I performed a time-series regression using various types of neural networks such as ANNs, CNNs, RNNs, and LSTMs on the IMF WEO dataset, predicting economic indicators such as GDP and Inflation for 100+ countries. (See Notebook)

Spring 2019 **Course Projects**, *Mathematical Foundations of Cryptography*, UTSA.
Both midterms (1, 2) for this class were completed in SageMath (Mathematical Python package), and my final presentation and paper were over the lattice-based NTRU cryptosystem.

Spring 2021 **pf2ecs**, *Rowdyhacks*, UTSA.
For the 2021 UTSA Hackathon, Rowdyhacks, I and 2 other people developed a digital "character sheet" for Pathfinder 2e, a tabletop role-playing game, in Java, using Maven and JavaFX to create a cross-platform executable. The entire backend was planned and completed by me in 40 hours. (See Code, Diagram)

## Experience

### Academic

Spring–Summer 2021 **Computational Algebra and High Dimensional Geometry Research Seminar**, *UTSA*.
Invited and attended a research seminar with Dr. Alperen Ergur along with a graduate student and a postdoc over the Spring and Summer. Joint seminar with Texas A&M and University of Missouri.
I was responsible for preparing lecture notes and giving hour and a half long lectures over each week's topics, alternating with other student.

Summer 2019 **Algebraic Topology Summer Seminar**, *University of Notre Dame*, South Bend, IN.
Invited and attended a week-long fully-funded seminar under Dr. Behrens. Each day we attended lectures, worked on problem sets, and researched a sub-field that we spoke about on our final day.

Spring–Summer 2019 **Model Theory and Proof Theory Research Seminar**, *UTSA*, San Antonio.
Invited and attended a research seminar over Mathematical Logic, Model Theory, and Proof Theory under Dr. Dueñez and Dr. Iovino as a Freshman with two other graduate students.
Each of us gave a 30-minute lecture once a week over their reading. My focus was on Model Theory.

### Work

2018–2020 **Mathematics Tutor**, *UTSA*, San Antonio.
I was hired as the youngest tutor by UTSA to tutor students in College Algebra, Calculus, Linear Algebra, Proofs, Real Analysis, Abstract Algebra, Topology, Probability and Stats, and Number Theory

### Volunteer

2021– **Co-Chair**, *YDSA at UTSA*, San Antonio.
I founded alongside 4 other students and grew, as an elected Co-Chair, UTSA's YDSA to be the largest political organization on campus within a single semester.
We organized weekly political/economic seminars, worked with city council and activists to raise hundreds of dollars monthly for our city's homeless population, fought for and won additional student parking and transportation, and assisted grassroots political campaigns for city council and both state and national legislature through mass canvassing.

## Coursework (# of semesters)

- Calculus (3)
- Real Analysis (4*)
- Abstract Algebra (3*)
- Linear Algebra (2*)
- Fnd. of Cryptography*
- Adv. Number Theory*
- Topology (2*)
- Differential Equations
- Probability and Stats (3*)
- Computer Architecture
- Operating Systems
- Systems Programming (2*)
- Data Science
- Artificial Intelligence
- Deep Learning*
- Math. of Neural Networks*
- Database Systems
- Analysis of Algorithms

*: One or more of the semesters was a graduate-level course.

## Languages

English Native

French Elementary *Currently Learning*

## Interests

Camping I love to go camping, hiking, climbing, and on other outdoors adventures across the US and the World.

Music I have played piano since I was 6 and saxophone since middle school, even getting to perform as a soloist in one of the country's best high school jazz bands.

Bookbinding I enjoy creating hardcover books by hand from public domain texts and creating journals / planners for my friends and family.