

Nicholas Rodriguez

Frisco TX | (214)-705-4021 | n1ckrod@tamu.edu | [linkedin](#) | [github](#) | [website](#)

EDUCATION

Texas A&M University, College Station, TX

Graduating May 2027

- B.S. in Computer Science at the College of Engineering (*Cumulative GPA: 3.6/4.0*)
- Awards: 3x AP Scholar Award & National Hispanic Recognition Award

SKILLS

- **Technical Skills:** Python, C++, C, Java, SQL, HTML, CSS, Git, APIs, React
- **Frameworks & Libraries:** TensorFlow, scikit-learn, XGBoost, React, NumPy
- **Core Knowledge:** Data Structures & Algorithms, Software Engineering, Machine Learning, Computer Architecture
- **Language Skills:** English (Fluent), Spanish (Native Speaker, fluent in reading/writing/speaking)

WORK EXPERIENCE

Machine Learning Research Assistant, Texas A&M University

Aug 2024 - Present

XGBoost Model for TOF-MS Data

- Developed and optimized an **XGBoost model** for TOF-MS data analysis, improving chemical compound identification accuracy.
- Applied **TensorFlow** and **scikit-learn** to streamline data processing workflows, reducing analysis time significantly.
- Applied **hyperparameter tuning** and **cross-validation**, lowering prediction error rates by double digits.
- Coordinated weekly research meetings and collaborated across team members to integrate models and results.

Data Processing for Aerosol Mass Spectrometry (AMS)

- Processed raw AMS data alongside external environmental datasets by integrating the NC State Climate Office Air Quality API, enriching analysis with real-time air quality and weather metrics.
- Cleaned & structured AMS datasets (Python/MATLAB), improving ML workflow compatibility.
- Performed data validation and quality checks in collaboration with a cross-functional team, ensuring accurate, reliable datasets for downstream research and analysis.

PROJECTS

C++ Backtesting Engine for Trading Strategies

- Built a high-performance **C++ engine** to backtest systematic strategies over historical OHLCV data with pluggable strategies and simulated execution.
- Implemented SMA crossover and mean-reversion models, portfolio accounting, and performance reporting (CAGR, Sharpe, max drawdown).
- Optimized data ingestion and computation with efficient data structures and minimal allocations; compiled with **CMake** for portable builds.

Personal Portfolio Website

- Built and deployed a professional portfolio website with **HTML, CSS, and JavaScript** to showcase projects, skills, and work experience.
- Implemented responsive design principles to ensure compatibility across devices and optimized website performance for faster load times, improving user engagement.

LEADERSHIP & PHILANTHROPY

Alpha Tau Omega Fraternity - Public Relations Chair

Fall 2024 - Present

- Coordinated the "Tenders and Tau's" event, raising **\$10,000+** for the Veterans of Foreign Wars Organization.