# Brian Rojas

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## EDUCATION

**University of Central Florida** Orlando, FL

- **GPA**: 3.8 | *B.S in Computer Engineering and Minor in Mathematics.* *Aug. 2025 - Present*
- **Related Coursework**: *Data Structures & Algorithms, Operating Systems, Computer Architecture, Embedded Systems, Circuits I-II Machine Learning, Linear Algebra, Fourier Analysis, Signals Processing*

**Indian River State College** St Lucie, FL

- **GPA***:* 3.7 | *A.A in Engineering* *May 2025*
- *Honors: Magna Cum Laude*

## EXPERIENCE

**NASA SUITS** Orlando, FL

*Machine Learning Engineer* *Sept. 2025 - Nov. 2025*

- Built voice-activated EVA AI assistant using Microsoft Bitnet 1-bit LLMs for edge inference: 6× faster, 80% less power
- Integrated Windows Speech API via MRTK3-Unity for real-time STT/TTS and live telemetry queries
- Designed RAG-based multi-agent system for safe procedural guidance with exact values, document citations, and ground-control verification

**University Of Central Florida** Orlando, FL

*Undergraduate Researcher* *Aug. 2025 - Present*

- Engineered deep stochastic volatility models using 1-minute SPX options mid-prices to estimate realized volatility kernels via convolutional neural networks.
- Fine-tuned Neural SDEs with learnable drift/diffusion MLPs to replicate 15-min to 1-day ATM skew dynamics, volatility surface calibration accuracy by 18%.
- Applied deep reinforcement learning to analyze market microstructure and detect volatility arbitrage signals in real time options flow

## RESEARCH & PROJECTS

**COVID-19 Pneumonia Detection from X-RAYS**

- Developed a neural network achieving 93% accuracy in detecting pneumonia from chest X-ray images with TensorFlow and training on medical imaging datasets from Kaggle
- Implemented data augmentation to improve model and reduce overfitting on limited medical imaging data, achieving high confidence predictions across validation sets

**Volatility Surface Forecasting**

- Developed ConvLSTM neural network for forecasting S&P 500 volatility surfaces 30-day, lower MSE than GARCH baseline through modeling volatility surface across strikes and maturity
- Implemented advanced feature engineering incorporating realized variance, order book imbalance, and higher momentum to capture complex market dynamics and improve forecasting accuracy for derivatives pricing

**DL Intraday Volatility Prediction**

- Trained GRU + HAR + GARCH-models on SPY/QQQ realized variance, order book imbalance, and higher moments (skewness, kurtosis) to predict intraday volatility.

## SKILLS AND INTERESTS

- **Language:** English & Spanish
- **Skills:** Python and C/C++, Rust, PyTorch, Assembly, Volatility & Derivatives
- **Interests:** Philosophy | Nutrition | Running | Reading