

# Shean Rahman

U.S. Citizen | Sheanrahman192@gmail.com | (703)-944-0423

## Education

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**Columbia University, Columbia Engineering**, New York, NY  
**B.S. Applied Physics | Computer Science Minor**

**Expected Graduation, May 2027**

- Extracurricular: Columbia Space Initiative SUITS, Blueshift, Columbia Spectra, Brazilian Jiu Jitsu
- Cumulative GPA: 3.72

**James W. Robinson Secondary School**, Fairfax, VA

**September 2019 – June 2023**

Advanced Diploma | International Baccalaureate (IB) Diploma

## Experience

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**Predictive ML Research** – *Columbia Fusion Research Center*

**December 2024 - Present**

- Led end-to-end development of a time-series machine learning pipeline for 4-state plasma event classification, achieving 95.6% accuracy on 200K+ data points using PyTorch
- Built and optimized Random Forest models in scikit-learn with stratified cross-validation and automated hyperparameter tuning (600+ configs), reducing data leakage and improving robustness on unseen experimental runs
- Discovered 8 key thresholds and optimal parameter ranges for suppressing instabilities by running single-parameter sweeps on a trained Random Forest model, guiding fusion experiment settings

**Robotics Engineer** – Robo Built

**November 2025 - Present**

- Developing bimanual autonomous robotic systems & tools in construction applications
- Built digital twin simulation in physics-driven platform (NVIDIA & Isaac)
- Integrating multi-modal sensor fusion (LiDAR, IMU, and Computer Vision) to ensure robust navigation and safety compliance on construction sites

**Summer ML Researcher** – *Columbia Fusion Research Center*

**May 2025 – August 2025**

- Built and trained Temporal Convolutional Network and LSTM models (PyTorch) to predict instabilities in fusion energy systems on 7M+ data points, achieving 90.8% accuracy and enabling early intervention to prevent disruptions and improve energy extraction reliability.
- Reduced training runtime by 88% with A100 GPU acceleration and pipeline optimizations, supporting rapid experimentation cycles and faster delivery of insights to researchers.

**CAD Designer** – *UVA Rocketry Team*

**August 2023 – June 2024**

- Utilized SolidWorks and OpenRocket to design, simulate, and optimize a rocket to achieve a targeted 10,000 feet apogee
- Studied and assessed the ideal shape, size, and quantity of fins for optimal rocket performance
- Achieved 60th place out of 120 teams at the Spaceport America Cup 2024, marking the club's debut appearance in the competition

## Projects

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**AnticiPatient – Healthcare Technology Platform**

**June 2025 – November 2025**

- Developed a full-stack platform aggregating real-time hospital data (ER wait times, specialties, travel logistics) to enable faster, data-driven urgent care decisions.
- Selected into Columbia University's CS3 VALIDATE Accelerator, conducting customer discovery, refining product strategy, and scaling application of smart-city technologies to improve emergency healthcare access.

**Focus Monitoring Tool**

**May 2025 – July 2025**

- Designed and developed AI-powered (CNNs) focus enhancer combining eye-tracking, blink frequency, posture analysis, smart screen, and input device monitoring to deliver real-time concentration scores.
- Engineered a multimodal data pipeline to synchronize visual and behavioral inputs, optimizing real-time inference performance and improving concentration score stability

**Cryo-Compression Device for CIPN Treatment**

**January 2023 – May 2024**

- Designed and developed a cryo-compression device to alleviate chemotherapy-induced neuropathy (CIPN) symptoms
- Achieved 91.7% cost reduction compared to existing alternative Solutions
- Optimized performance through data-driven analysis of iterative testing, user feedback, cooling & pressure efficiencies

## Skills

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**Software:** Python, Java, MATLAB, PostgreSQL, PyTorch, TensorFlow, CUDA, Isaac Simulator

**Technical Coursework:** DSA, Computer Aided Design, Artificial Intelligence, Machine Learning, Linear Algebra, Laser Physics

**Design Software:** Fusion 360, SolidWorks (Certified), OpenRocket, Onshape

**Interests:** Brazilian Jiu-Jitsu, Astronomy, Neuroscience