

# Johan Willem Schulz Sweldens

440 Davis Court, Apt 707  
San Francisco, CA 94111  
+1 (908) 787-6543  
jws2215@columbia.edu

Software Engineer at Google | AI/ML & Security Infrastructure  
Seeking Opportunities in Quantitative Finance

---

## EDUCATION

### Columbia University, Master of Science

Major: Electrical Engineering, Specialization: Data-Driven Analysis & Computation

Coursework: Operating Systems, Advanced Deep Learning, Convex Optimization, Cloud Computing

Awards: Nikola Tesla Scholar

New York, New York

Sep 2023 – Dec 2024

### Cornell University, Bachelor of Science

Major: Mechanical & Aerospace Engineering, Minor: Electrical & Computer Engineering

Coursework: Autonomous Mobile Robotics, Networks, Statistics, Integrated Sensors & Actuators

Ithaca, New York

Aug 2018 – May 2022

## TECHNICAL SKILLS

**Programming & Software:** Python, C++, C, Go, Java, SQL, MATLAB, R, Bash/Shell, TypeScript, JavaScript

**Machine Learning & Statistics:** Time Series Modeling, Scikit-Learn, XGBoost, PyTorch, TensorFlow, pandas, NumPy, SciPy, StatsModels

**Quantitative & Financial Modeling:** Monte Carlo Simulation, Stochastic Processes, Risk Modeling, Scenario Analysis, Portfolio Optimization

**Deep Learning & NLP:** Transformers (BERT, GPT), CNNs, RNNs, GNNs, Transfer Learning, ViT, Reinforcement Learning

**Tools & Platforms:** GitHub, GCP, Docker, Kubernetes, Bloomberg API, Jupyter, SQL/NoSQL, Linux, CI/CD, MLOps

**Other:** Model Validation, Feature Engineering, Data Wrangling, Anomaly Detection, Backtesting, Statistical Testing

## EXPERIENCE

### Google

San Francisco, California

#### Software Engineer

Jan 2025 – Present

- Design and deploy high-reliability alerting pipelines in Go, C++, and Python to detect and surface real-time security violations across Google's global production fleet; integrated with Monarch and SQL-based backends for scalable metrics aggregation and fault-tolerant telemetry ingestion.
- Build Regional Trust enforcement systems applying default security controls and local role-based access policies across isolated security realms, ensuring compliance with geographic and organizational security boundaries at hyperscale.
- Develop secure, performant observability tooling and test environments for validating policy enforcement; created user-facing dashboards to visualize applied controls and policy coverage using internal platforms (Boq, Goa, HTML/JS, Java).

#### Software Engineering Intern

May 2024 – Aug 2024

- Built an end-to-end forecasting and anomaly detection pipeline for Optical Circuit Switch telemetry on Google's Machine Learning Supercomputer infrastructure, leveraging time series data and deep learning (RNNs with TensorFlow) to predict system failures.
- Designed and benchmarked statistical and machine learning models (ARIMA, Prophet, Isolation Forest, Autoencoder) for real-time anomaly detection in high-frequency sensor streams.
- Implemented scalable data ingestion and processing infrastructure to analyze hundreds of GBs of log data across thousands of TPU nodes in distributed environments.
- Evaluated models on latency, sensitivity, and false positive rate, applying performance metrics analogous to financial risk systems.

### MITRE Corporation

Boston, Massachusetts

#### Aerospace Engineer

July 2022 – July 2023

- Led the design and development of robotic arms to interface with smartphones using commercial components, 3D-printed parts, and custom Python control programs.
- Built and tested a 400MHz tensegrity inspired antenna for CubeSats, achieving comparable performance to non-deployable designs.
- Engineered weight-optimized components for quadcopter drone prototypes, enhancing flight stability and reducing material costs.
- Innovated radar cross-section testing methods using additive manufacturing, reducing time and costs by 90%.

#### Aerospace Engineering Intern

June 2021 – Aug 2021

- Conducted shock and vibration tests on communications hardware, ensuring compliance with industry standards.
- Created detailed thermal analysis of electronics using ANSYS Icepak; developed animated presentations of critical heat areas and recommended solutions, which were adopted by clients for design improvements.

### Advanced Space Technology Research and Architectures Laboratory at Cornell University

Ithaca, New York

#### Research Assistant

Sep 2020 – May 2022

- Designed a miniaturized Time-of-Flight Mass Spectrometer for organic molecule detection, featuring a rotational ion source and an Einzel lens for precision targeting.
- Simulated electric potentials for Einzel lenses and electrospray devices using MATLAB, employing a 2D axisymmetric Laplace solver and finite element analysis to optimize performance.
- Developed a dual-emitter electrospray thruster in collaboration with the MIT Space Propulsion Laboratory, utilizing CAD and rapid prototyping techniques for experimental applications.
- Presented at the Harvard National Collegiate Research Conference and received the Engineering Undergraduate Research award in Fall 2020 and Spring 2021.

### Electric Propulsion and Plasma Dynamics Laboratory at Princeton University

Princeton, New Jersey

#### Research Assistant Intern

May 2020 – Aug 2020

- Developed an actuated probe for plasma diagnostics, creating the motor control software and GUI using Python.
  - Conducted vibrational and transient thermal analysis on 3U CubeSats using COMSOL, ensuring compliance with industry standards.
-