Johan Willem Schulz Sweldens

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AI/ML Graduate Student

EDUCATION

Columbia University, Master of Science — **New York, New York**
Major: Electrical Engineering, Specialization: Data-Driven Analysis & Computation — Sep 2023 – Dec 2024
Coursework*:* Convex Optimization, Neural Networks, Advanced Deep Learning, Reinforcement Learning
Awards: Nikola Tesla Scholar

Cornell University, Bachelor of Science — **Ithaca, New York**
Major: Mechanical & Aerospace Engineering, Minor: Electrical & Computer Engineering — Aug 2018 – May 2022
Coursework*:* Autonomous Mobile Robotics, Networks, Statistics, Data Structures & Algorithms

Harvard Extension School, Non-degree Program — **Cambridge, Massachusetts**
Major: Computer Science — Sep 2022 – May 2023
Coursework*:* Data Structures, Algorithms

TECHNICAL SKILLS

Software Development & Programming: C/C++, CUDA, Java, JavaScript, MATLAB, LaTeX, Python, R & RStudio.
Data Science & Machine Learning: Computer Vision, CVX, Keras, PyTorch, Scikit-Learn, TensorFlow, Time Series
Deep Learning: Autoencoders, CNN, GNN, GRU, RNN, LSTM, LLM, NLP, Transfer Learning, Transformers, ViT
Tools & Platforms: Edge Computing, Docker, GitHub, Google Colab, Google Cloud Platform (GCP), Linux, SQL.
Hardware Engineering: Additive Manufacturing, Microcontrollers, Finite Element Analysis, COMSOL, L-Edit MEMS.

EXPERIENCE

Google — **Sunnyvale, California**
Software Engineering Intern — **May 2024 – August 2024**
- Constructing a RNN using PyTorch to predict device failures in Optical Circuit Switches using real-time time series data.
- Implementing and comparing statistical, Machine Learning, and Deep Learning models to automate anomaly detection for the Machine Learning Super Computer TPU (Tensor Processing Unit) team for Google Cloud.

MITRE Corporation — **Boston, Massachusetts**
Aerospace Engineer — **July 2022 – July 2023**
- Led the design of robotic arms to interact with smartphones using commercial components, 3D printed parts, and a control program written in Python.
- Built and tested a 400MHz tensegrity inspired antenna for CubeSats.
- Designed weight optimized parts for prototype quadcopters and fixed-wing drones.
- Developed new ways of testing radar cross-sections using additive manufacturing to reduce time and costs 90%.
- Performed shock and vibration tests on various communications hardware.
- Created a steady state thermal analysis of electronics using ANSYS Icepak and presented animations of the areas of concern and in-depth solutions to clients.

Advanced Space Transit and Architectures Laboratory at Cornell University — **Ithaca, New York**
Research Assistant — **Sep 2020 – May 2022**
- Designed a miniaturized Time of Flight Mass Spectrometer to detect organic molecules implementing a rotational ion source and an Einzel lens.
- Simulated electric potentials for Einzel lenses and electrospray devices using a 2D axisymmetric Laplace solver and a finite element solver implemented in MATLAB.
- Created a dual emitter electrospray thruster for collaborative experiments with the MIT Space Propulsion Laboratory using CAD and rapid prototyping techniques.
- 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 to collect plasma diagnostics by writing the motor controller and its GUI in Python.
- Executed vibrational & transient thermal analysis on 3U CubeSats using COMSOL