Johan Willem Schulz Sweldens

129 Franklin St, Apt 125
Cambridge MA, 02139

+19087876543
jws426@cornell.edu

Education

Columbia University September 2023 – December 2024
M.S. Electrical Engineering, (Data-Driven Analysis & Computation) *New York, New York*

Cornell University August 2018 – May 2022
B.S. Mechanical and Aerospace Engineering *Ithaca, New York*

Harvard Extension School August 2022 – May 2023
Non-degree program in Computer Science *Cambridge, Massachusetts*

Research Experience

Advanced Space Transit and Architectures Laboratory September 2020 – May 2022
Undergraduate Research Assistant *Cornell University, Ithaca, NY*

- Designed a miniaturized Time of Flight Mass Spectrometer to detect organic molecules using a rotational ion source.
- 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 April 2020 – August 2020
Undergraduate Intern *Princeton University, Princeton, NJ*

- Developed an actuated Langmuir probe to collect plasma diagnostics from Hall-effect Thrusters and programmed the stepper motor controller in Python.
- Took a class on Plasma physics with the Princeton Plasma Physics Laboratory.

Work Experience

MITRE Corporation June 2022 – August 2023
Prototype Engineer *Bedford, Massachusetts*

- Led the design of robotic arms to interact with smartphones using stepper motors, 3D printed parts, and a control program written in C++.
- Built and tested a 400MHz tensegrity inspired antenna for CubeSats.
- Designed weight-optimized parts for prototype quad-copter and fixed-wing drones.
- Prototyped new devices using 3D printing and optimized them using FEA.

MITRE Corporation May 2021 – August 2021
Mechanical Engineering Intern *Bedford, Massachusetts*

- Performed shock and vibration tests on various electrical equipment.
- 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.

Cornell Rocketry Team September 2018 – May 2020
Propulsion Engineer *Cornell University, Ithaca, NY*

- Confirmed component structural integrity using ANSYS and gained insight on weight reduction operations using topology optimization.
- Executed Computational Fluid Dynamics (CFD) analyses using ANSYS Fluent.

- Made an N-Class solid rocket motor igniter with the desired delay from motor grain geometry and propellant fuel intrinsic properties.

Federal Communications Commission May 2019 – August 2019
Engineering Intern *Washington, DC*

- Reviewed business requirements and analysis plans for policy advisers.
- Contributed to modernizing the TV broadcasting licenses database.
- Researched and presented advanced topics in telecommunications including future convergence between 5G and ATSC 3.0 broadcast technologies to FCC regulators.

Student Organizations

Cornell Boxing Club February 2021 – May 2022
Club Boxing Trainer *Ithaca, New York*

Society of Hispanic Professional Engineers August 2018 – May 2022
Active Member *Ithaca, New York*

Cornell Institute of Electrical & Electronics Engineers February 2021 – May 2022
Academic Team Director *Ithaca, New York*

Clara Dickson Hall Student Council September 2018 – May 2019
Elected Representative *Ithaca, New York*

Relevant Coursework

MAE 5180: Autonomous Mobile Robots
ECE 4320: Integrated Sensors & Actuators
ECE 5970: Molding Light Flow
CS 2850: Networks
CSCI E22: Data Structures

Teaching Assistantships

MAE 5540: Propulsion of Spacecraft
ECE 3030: Electromagnetic Fields and Waves
PHYS 2214: Physics III Oscillations, Waves and Quantum Physics

Awards & Honors

Columbia University Nikola Tesla Scholarship 2023
Louis Stokes Alliance for Minority Participation Scholarship 2021
Undergraduate Research Award 2020, 2021
Dean's List 2018 - 2022

Skills

Programming Languages: C++, Java, JavaScript, Python, R & R Studio, MATLAB, SQL
Engineering Skills: Additive Manufacturing, CFD, COMSOL, FEA, L-Edit MEMS, Simulink
Languages: English, German, Spanish
Other Skills: Solidworks, Microcontrollers, LabVIEW, LaTeX, Microsoft Office