Daniel R.W.M. Scuba

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Mechanical Engineer with hands-on experience in semiconductor equipment and prototype development using 8+ years of SOLIDWOKRKS. Skilled in CAD modeling, engineering drawings with GD&T, and mechanical analysis. Experienced in troubleshooting and root cause analysis (FMEA), hardware testing, and documentation through engineering reports. Strong background in CNC machining, 3D printing, and design.

Education, Skills & Awards

University of California, San Diego San Diego, CA

Bachelor of Science in Mechanical Engineering *September 2021 – December 2025*

Relevant Coursework & Skills

- **Relevant Courses:** Solid Mechanics, Mechanics of Engineering Materials, Fluid Mechanics, Heat Transfer, Signals & Systems, Experimental Techniques (electronics), Light Sources for Industrial Applications (EUV lithography, plasma optics-–with ASML guest lectures), Linear Controls, Mechanical Engineering Laboratory
- **Software: SOLIDWORKS**, ANSYS, Autodesk Fusion, Inventor, AutoCAD, Microsoft Office
- **Languages:** Java, MATLAB, **Excel**, LaTeX, Python
- **Technical:** BOM/ECO management, laser-cutting, water-jetting, 3D Printing, CAD, Machining, Failure Mode and Effects Analysis (FMEA), Finite Element Analysis (FEA), Computational Fluid Dynamics,
- **Awards:** Eagle Scout (2021), FIRST Dean's List Finalist (2019)

Experience

UCSD Calit2 Nano3 Facility|*Equipment Engineering Lab Assistant* *San Diego, CA|June 2024 – Present*

- Performed routine calibration, preventative maintenance, and troubleshooting on Denton 18 Sputter, Ebeam Evaporator, and Oxford Etchers.
- Documented anomalies, logged service activities, & communicated issues to senior engineers to minimize downtime
- Operated **semiconductor equipment**: Performed sputter depositions, Ebeam target melts, PECVD processes, & operated glass bead blasting equipment to clean sputtering, evaporator, plasma etching and ALD systems.
- Assisted in training new lab users on proper operation and safety protocols of advanced semiconductor equipment

SUTD Knitted Health Wearables Lab|*iUROP Researcher* *Singapore|June 2025 – August 2025*

- Collaborating with Prof. Hong Yee Low to qualify knitted strain sensors in a knee brace for monitoring knee stability through anterior/posterior translation, valgus/varus alignment, and transverse rotation.
- Identified optimal sensor placement based on experimental data to maximize strain detection and signal clarity.
- Designed precision-controlled testbeds using **SOLIDWORKS** & **3D Printing** to isolate individual knee movement axes, ensuring repeatable sensor validation and minimizing human error.

UCSD Jahed Nanobioelectronics Lab|*Undergraduate Student Researcher San Diego, CA|November 2024 – Present*

- Conducted **ANSYS**-based multiphysics simulations to study turbulent mixing, diffusion, and thermal transport in microfluidic devices, improving performance for NEA drug delivery systems.
- Developed strong interdisciplinary collaboration skills through **CFD** analysis, contributing to weekly updates, achieving successful simulation runs for NEA drug delivery systems, and presenting findings to the research team.

Copeland|*Project Engineering Co-op* *Sidney, Ohio|January 2024 – May 2024*

- Managed BOMs, ECOs, and revision control across 60+ product lines to support manufacturability and quality. design improvements including print updates, new model releases, refrigerant comparisons.
- Designed and executed **hardware test plans** (calorimeter, hydrostatic, oil bath, and sonic leak tests) to validate compressor performance and safety.
- Conducted compressor coefficient analysis for customers by creating an Excel coefficient calculator to compare calculated performance vs tested performance for new refrigerants with low GWP for expected performance.

RobotX, Team Inspiration|*Build Team* *September 2021 – June 2022*

- Designed propulsion systems in Autodesk Fusion for WAM-V, optimized for thrust, power efficiency, & cost.
- Performed thrust calculations and mechanical evaluations for multiple propulsion configurations to identify the most effective dual-thruster layout.
- Led design transition and testing phases, achieving enhanced forward thrust performance and improved hardware reliability under marine conditions.

Projects

Senior Design: LIFESAVER Project Rover Module *March 2025 – June 2025*

- Utilized 8+ years of **SOLIDWORKS** experience to design and model a terrain-capable rover, featuring a 6-wheel rocker-bogie suspension and modular payload bay to deliver medical equipment in disaster zones.
- Fabricated all structural and suspension components using **CNC**, **manual milling**, **water-jetting** & **laser-cutting** to produce high-precision aluminum parts to enable load testing with a 50+ lb payload.
- Sourced and implemented drive motors, shafts, and frame materials based on calculated torque requirements, terrain simulation results, and performance trade-offs between mass and rigidity using **MATLAB** and **ANSYS**.