Andrew Clements

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EDUCATION

University Of Virginia, School of Engineering and Applied Science — Charlottesville, VA
B.S. Electrical Engineering GPA: 3.96 — 2026
Relevant Coursework: Signals and Systems, Digital Logic Design, Thermodynamics, Heat Transfer, Embedded

Germanna Community College — Fredericksburg, VA
A.S. Electrical Engineering GPA: 3.8 — 2024
Relevant Coursework: Circuits, Electronics, EGR Design

AWARDS & HONORS

IEEE ITHERM – Avram Bar-Cohen Best Paper Award, Runner-Up — May 2025
- Co-Author: Development of Liquid Metal and Silicon Pin Fin Composite Thermal Interface Materials

U.S. Provisional Patent – Co-Inventor — May 2025
Stanford University
- U.S. Provisional Patent Application 63/809,052 - Silicon Pin Fin Liquid Metal Composite TIMs

RELEVANT EXPERIENCE

SWAMI LAB – Biophysical Microsystems Research Group — Jan 2026 - Present
University of Virginia — Charlottesville, VA
- Co-designed mixed-signal FPGA system integrating high-speed DAC and ADC for impedance signal acquisition
- Designed ADA4817 analog front-end with feedback compensation for impedance signal conditioning
- Supported DC-coupled driver architecture and SPI control for high-speed data path integration

FTSC VAST – Semiconductor Fabrication Training (Cleanroom) — Fall 2025
University of Virginia — Charlottesville, VA
- Operated MicroWriter ML3, SUSS MABA6 aligner, spin coaters, Bruker ContourGT, and Gemini SEM
- Completed photolithography, DRIE, sputtering (Ti/Au), e-beam deposition, BOE wet etch, ICP-RIE
- Diagnosed defects (comets, edge bead, residue, undercut) and improved process repeatability

NANOHEAT LAB – Undergraduate Research Internship — Summer 2024, Summer 2025
Stanford University — Stanford, CA
- Studied nanoscale heat transfer in electronic structures using IR microscopy and thermal modeling
- Developed and validated thermal interface cooling strategies for power electronics
- Reduced measurement uncertainty in conventional TIM testers
- Designed, fabricated, and tested Si Pin fin chips to measure thermal conductivity of relevant LM TIMS

REINKE LAB – Undergraduate Materials Science Research Internship — Summer 2023
University of Virginia — Charlottesville, VA
- Studied surface morphology in electrochemically etched Ni-based super alloys
- Used atomic force and scanning electron microscopy, conducted image analysis, and performed electrochemical etching

PROJECTS & TEAMS

UVA E-BIKE TEAM — Fall 2025 - Present
University of Virginia — Charlottesville, VA
- Collaborated in the design and fabrication - integrating motor control, battery systems, and embedded electronics
- Performed subsystem assembly, electrical integration, and validation testing to ensure reliable operational

UVA SOLAR CAR TEAM — Fall 2024 - Spring 2025
University of Virginia — Charlottesville, VA
- Electrical Subteam - contributed to power distribution wiring and high-current system integration
- Power systems wiring, thermal constraints analysis, integration testing

GERMANNA ENGINEERING SOCIETY — Fall 2022 - Spring 2024
Germanna Community College — Fredericksburg, VA
- Logistics Lead – coordinated university lab tours and museum tours
- Volunteered at Culpepper Airfest, annual STEM-H program, and the Engineering Outreach Group

TECHNICAL SKILLS

- **Fabrication & Metrology:** Photolithography, SEM, DRIE, CVD, e-beam evaporation, BOE etch, ICP-RIE, profilometry
- **Software**: MATLAB, C, C++, VHDL, Verilog, Assembly, Spice, kLayout, Fusion 360
- **Cleanroom:** Wafer handling, safety protocols, RCA-style cleaning, process flow execution