Christopher Kniss

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EDUCATION

Ph.D. in Electrical Engineering (Direct Ph.D. Program) **Fall 2025 – Present**
University of Massachusetts Amherst *Amherst, MA*
- Advisor: Dr. Rod Kim
- Research Assistantship

B.E. in Computer Engineering (with Highest Honors) **Completed May 2025**
Stevens Institute of Technology *Hoboken, NJ*
- Concentration: Electronics & Embedded Systems
- Minor: Physics
- Cumulative GPA: 3.959

AWARDS & HONORS

- **Dean's List** — Stevens Institute of Technology
- **Edwin A. Stevens Scholarship** — Stevens Institute of Technology
- **Provost's Office Undergraduate Research Fund** — Stevens Institute of Technology

PUBLICATIONS

C. Kniss, A. Sharma, R. Phon, G. Shimonov, E. Socher, P. R. Shrestha, K. Ramu, J. P. Campbell, A. Pourvali Kakhki, R. Al Hadi, and R. Kim, "Temperature-Compensated Multi-Level CMOS Modulators Operating from 10 K to 300 K for Cryogenic Interconnects," *IEEE Journal of Microwaves*, vol. 5, no. 4, pp. 1234–1245, Oct. 2025.

A. Sharma, **C. Kniss**, R. Phon, and R. Kim, "Ceramic Fiber Interconnects Beyond 1000°C Enabled by Automatic Gain Compensated Millimeter-Wave CMOS Transceivers," in *2025 IEEE International Symposium on Circuits and Systems (ISCAS)*, May 2025, pp. 1–5.

CONFERENCES & PRESENTATIONS

Inaugural Riccio College of Engineering Innovation Day **November 2025**
University of Massachusetts Amherst *Amherst, MA*
- Presented poster on temperature-compensated cryogenic CMOS modulators during student poster and networking session

NIST SURF Colloquium **July 2025**
National Institute of Standards and Technology *Gaithersburg, MD*
- Delivered oral presentation on cryogenic PCB design and lab instrumentation developed during SURF internship
- Communicated technical research findings to broad scientific audience

Analog Folding Amplifier Poster Presentation **Spring 2025**
Stevens Institute of Technology *Hoboken, NJ*
- Presented design and simulation results for analog folding amplifier operational up to 100 MHz

iCNS Launch Event Demonstration **Fall 2023**
Stevens Institute of Technology *Hoboken, NJ*
- Demonstrated high-temperature alumina fiber waveguide experiments and VNA characterization to multidisciplinary audience

RESEARCH EXPERIENCE

Graduate Research Assistant   **Fall 2025 – Present**
University of Massachusetts Amherst, SINE Lab   *Amherst, MA*
- Conducting research on cryogenic CMOS circuits and millimeter-wave communication systems under Dr. Rod Kim
- Designing and characterizing temperature-compensated modulators for extreme environment applications

NIST SURF Program Intern   **May 2025 – August 2025**
National Institute of Standards and Technology   *Gaithersburg, MD*
- Designed PCBs in Altium Designer for cryogenic chamber integration and extreme temperature testing
- Characterized S-parameters and RF performance using vector network analyzers, oscilloscopes, and signal generators
- Operated probing stations in both cryogenic and room-temperature environments
- Developed lab protocols for high-frequency measurements in extreme thermal conditions

Undergraduate Research Assistant   **January 2024 – May 2025**
Stevens Institute of Technology, SINE Lab   *Hoboken, NJ*
- Contributed ~15 hours per week conducting in-person lab experiments and attending weekly research meetings
- Investigated economic implications of RFIC design, fabrication, and implementation strategies
- Supported Provost's Office of Undergraduate Research initiatives

Independent Research Project: Analog Folding Amplifier   **May 2024 – May 2025**
Stevens Institute of Technology   *Hoboken, NJ*
- Designed analog folding amplifier operational up to 100 MHz using Cadence simulation tools
- Applied device physics principles to optimize transistor sizing and debug circuit performance
- Led weekly project meetings with Dr. Rod Kim and delegated tasks to 3 peers, accelerating timeline by 2 weeks
- Developed project management and independent research skills through self-directed design cycle

High-Temperature Waveguide Research   **September 2023 – December 2023**
Stevens Institute of Technology   *Hoboken, NJ*
- Characterized S-parameters of alumina fiber waveguides at temperatures up to 1100°C using vector network analyzer
- Conducted extreme temperature experiments to evaluate millimeter-wave propagation in harsh environments
- Performed lab demonstrations and technical presentations of experimental setup and results

TEACHING EXPERIENCE

Teaching Assistant, Electronic Circuits Course   **September 2023 – December 2023**
Stevens Institute of Technology   *Hoboken, NJ*
- Hosted optional recitations reviewing core course content for class of 44 students, achieving consistent attendance of 20–30 students
- Crafted practice problems aligned with lecture material to reinforce circuit analysis concepts
- Graded assignments and proctored exams, providing detailed feedback to support student learning

PROFESSIONAL MEMBERSHIPS

- **Tau Beta Pi** — Alpha Chapter
- **IEEE Eta Kappa Nu (HKN)**

SKILLS

Software: Cadence (Virtuoso, Spectre), Altium Designer, Git, MATLAB, Renesas E2 Studio, Vivado, Arduino IDE, SolidWorks, Microsoft Office Suite

Programming Languages: C and C++ (Experienced), Linux Command Line Interface, VHDL, x86 and ARMv8 Assembly, Java (Proficient)

Lab Equipment: Vector Network Analyzers (VNA), Oscilloscopes, Signal Generators, Probing Stations, Cryogenic Test Equipment

RELEVANT COURSEWORK

Graduate Coursework (University of Massachusetts Amherst):
- E&C-ENG 606: Electromagnetic Field Theory — Electromagnetic fields in dielectric and lossy media, transmission lines, antennas, resonators, boundary and initial value problems

Undergraduate Coursework (Stevens Institute of Technology):
- **Electronics Design:** Introduction to VLSI Design, Electronic Circuits, Design of Dynamical Systems, Digital System Design
- **Device Physics:** Electromagnetism, General Chemistry II, Thermodynamics, Design with Materials, Quantum Mechanics with Engineering Applications
- **Embedded Systems:** Digital & Computer System Architecture, Real-Time & Embedded Systems, Microprocessor Systems, Computational Data Structures and Algorithms, Information Systems Engineering I
- **Capstone:** Senior Design Project — Speaker Spine (brand-agnostic smart home audio system, team of 6)