Kabato Burka

Northeastern University · Renesas Electronics Corporation
he/they · Boston, MA 02120, USA · U.S Citizen
(+1) 763-913-5534 | burka.k@northeastern.edu | www.kabatoburka.com | KabatoB | kabato-burka

Education

Northeastern University — *Boston, MA*

Masters of Science in Electrical and Computer Engineering with Concentration in Power System — *May 2026*

GPA: 3.83
Selected coursework: Electric Drives, Electric Vehicles Powertrains, Electromagnetic Devices, Power Electronics, Power Systems Analysis, Power Management Integrated Circuits

Northeastern University — *Boston, MA*

Bachelor of Science in Electrical Engineering — *December 2024*

GPA: 3.55
Honors: Dean's List, Global Scholar
Study Abroad: Thessaloniki, Greece
Selected coursework: Electronic Design, Integrated Circuit Devices, Research

Publication

Heat Energy Harnessing via Seebeck Generators

American Society For Engineering Education Conference

- Katikaneni, R. R., & Farah, M., & Martinez, C. M., & **Burka, K**., & ANIAGBOSO, T. C., & Maheswaran, B. (2022, April), *Heat Energy Harnessing via Seebeck Generators* Paper presented at ASEE-NE 2022, Wentworth Institute of Technology, Massachusetts. 10.18260/1-2–42179

Research Experience

Energy Efficient Circuits and Systems Group (EECS) — *Boston, MA*

Research Assistant — *August 2025 - Present*

- Principal Investigator: Aatmesh Shrivastava
- Design and simulate with TSMC-65nm technology in Cadence Virtuoso of a DC/DC converter topology and compensation network for a high-efficiency 48 V to 1.8 V point-of-load power stage
- Develop Altium PCB layouts of converter designs based using reference schematic and layout of the EPC9097 100V, 20A GaN FET driven Half-Bridge Development Board, integrating specified inductors and resonant components into the design
- Characterize and test custom inductors and circuit parameters to validate performance against power density and efficiency targets

Programmable and Reconfigurable Soft Engineered Systems Laboratory (PARSES) — *Boston, MA*

Research Assistant — *July 2025 - Present*

- Principal Investigator: Kris Dorsey
- Engineer electronics hardware a robotic splint prototype with a programmable hinge joint, emphasizing long-arm actuation for soft wearable rehabilitation systems; integrate 2 IMUs and 1 ToF on ESP32 S2 with I2C logging; build a calibration jig to map 0 to 180°
- Assist with power delivery by configuring DC/DC converter and applying compensation networks for system stability from a 5V, 1A supply; deliver 3.3 V regulation, select passives, tune compensation; validate startup and transients
- Evaluate hinge motion and sensor responsiveness through iterative experimentation, refining control strategies and mechanical adaptability

The George J. Kostas Research Institute at Northeastern University (KRI) — *Burlington, MA*

RF Research Engineer Intern — *January 2024 - June 2024*

- Principal Investigators: Kevin Xu, James Vedral, Nicholas Bryden, and Joshua Park
- Validated antenna project designs for the Assured Communications and Electromagnetic Dominance Division
- Co-developed and executed tests for electromagnetic designs alongside research engineers
- Prepared lab equipment, including function generators, oscilloscopes, and vector network analyzers, for testing
- Translated test results into design updates that improved match and bandwidth

Advanced Materials and Microsystems Laboratory (AMML) — *Boston, MA*

Research Assistant — *January 2024 - April 2024*

- Principal Investigator: Nian Xiang Sun (Presently on Leave of Absence for Industry)
- Researched and prototyped a 4-point measurement resistive circuit to detect a 5 mohm change from a breath-based SARS-CoV-2 detecting glucose aerosol sensor
- Tested a low-power design to capture and differentiate respiratory resistivity signatures
- Validated sensor performance and explored applications in non-invasive diagnostics

Professional Experience

Renesas Electronics Corporation
Boston, MA

Field Application Engineer
January 2025 - Present

- Deliver schematic and system-level design guidance to accelerate product adoption with Renesas Power and Analog legacy and newly generated parts for consumer and industrial electronics applications in New England
- Contributed 7.5% to the New England Region's 2025 $70,000,000 design-in goal
- Host monthly distributor meetings in regional branches to generate awareness of potential solutions for over 100+ customers in the region
- Provide consultations, application guidance, and on-site engineering support for 20+ customer opportunities
- Collaborate with sales and product engineering teams to resolve technical challenges and align solutions

Fleet Robotics
Somerville, MA

Robotics Test Engineer Intern
September 2024 - December 2024

- Researched magnetic system behavior, focusing on field interactions and their adhesion to ship hulls
- Conducted experimental Shimadzu Autograph testing and data analysis to evaluate sensor reliability and magnetic interference in real-world environments for 50+ hand-assembled customer electropermanent magnets
- Inform design improvements based on magnetic field characterization and system response of 3 new prototypes

Amazon
Boston, MA

Hardware Development Engineer Intern
June 2024 - September 2024

- Directed Failure Modes and Effects Analysis for the 20lb Universal Item Sorter system across NA and EU/UK, establishing and monitoring KPIs to drive asset cost reduction for Amazon Reliability Maintenance Engineering
- Examined the use case and development of systems along with their sub-components at traveled sites in NA
- Consulted with key stakeholders to align project objectives and drive successful outcomes of asset reliability

SharkNinja
Needham, MA

Electrical Design Engineer Intern
July 2023 - December 2023

- Collaborated with senior members in designing analog circuits and development of novel concepts for next-generation cordless vacuum; contributed to 10+ schematic projects and 4 PCB spins, enabling 3 EVT/DVT prototypes
- Performed design, debugging, and board bring-up of analog real-time embedded electronics
- Led PCBA reworks of field products and analyzed consumer-reported issues with EE, PD, FW, and SW teams

Teaching

EECE 2150: Circuits and Signals: Biomedical Applications
Boston, MA

Teaching Assistant
September 2025 - Present

- Course instructor: Prof. Nicol Mcgruer
- Planning and running lab section for understanding of application of passive components and introduction of active components such as Operational Amplifiers, Instrumentation Amplifiers, and Light Emitting Diodes
- Grading assignments of weekly homework and quizzes for over 50 students
- Support students with hosted weekly office hours to discuss elements of class that students would like to discuss

EECE 5693: Electromagnetic Devices for RF and Wireless Communications
Boston, MA

Teaching Assistant
June 2025 - July 2025

- Course instructor: Prof. Hossein Mosallaei
- Held guided sessions on Ansys HFSS, teaching students how to simulate and design transmission lines and antenna configurations
- Supported students in understanding wave propagation, S-parameters, and impedance matching through lab assistance
- Assisted during lab sessions by answering technical questions, troubleshooting simulation issues, and reinforcing course material through hands-on guidance

University Leadership

Northeastern University Housing and Residential Life
Boston, MA

Resident Assistant
August 2022 - Present

- Plan, budget, and execute monthly events for 150+ undergraduates, fostering a sense of community
- Complete bi-annual leadership training on maintaining student safety and well-being as well as conflict control
- Serve as a peer resource by addressing resident concerns, sharing campus support services, and promoting inclusive living environments

Black Engineering Student Society
Boston, MA

Alumni Relations Chair
June 2024 - April 2025

- Advisor: Richard Harris
- Organized alumni panels, events, and mentorship programs to connect students with Black engineering professionals
- Built alumni membership structure with engagement tiers and decade representatives for the organization's 50th Anniversary
- Engaged alumni and local professionals to support student development through career talks, networking, and community-driven initiatives

Skills

Technical Skills: Hardware

- **Hardware Laboratory Tools:** Multimeter, Oscilloscope, Signal Generator, Soldering Iron (Through-hole and Surface Mount), Vector Network Analyzer, Spectrum Analyzer, Bench Power Supply, LCR meter, Logic Analyzer, Reflow Oven
- **Hardware Design Tools:** Altium, Ansys HFSS, Fusion 360, Keysight Genesys, KiCAD, LTspice, PLECS, OrCAD, Cadence Virtuoso
- **Components:** Digital logic, transistors, op-amps, and passive components.

Technical Skills: Software

- **Programming:** C++, MATLAB, Mathmatica, Python, LaTeX
- **Software Tools:** Adobe Suite, Asana, Git, Jira, Google Workspace, Microsoft 365, Slack, Windows, Linux, UNIX, Visual Studio Code

Professional Affiliations

Institute of Electrical and Electronics Engineers

Member since 2024

Institute of Electrical and Electronics Engineers Power Electronics Society

Member since 2024

National Society of Black Engineers

Member since 2023