

# 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

- R. R. Katikaneni, M. Farah, C. M. Martinez, **K. Burka**, T. C. Aniagboso, and B. Maheswaran, "Heat Energy Harnessing via Seebeck Generators," oral presentation, ASEE-NE 2022, Wentworth Institute of Technology, Boston, MA, Apr. 2022, doi: 10.18260/1-2-4217.

## Research Experience

### Energy Efficient Circuits and Systems Group (EECS)

Boston, MA

RESEARCH ASSISTANT

August 2025 - Present

- Principal Investigator: Aatmesh Shrivastava
- Designed and simulated 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
- Developed Altium PCB layouts of converter designs based using the 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
- Characterized and test custom inductors and circuit parameters to validate performance against power density and efficiency targets
- Projected preparation for the 2026 International Solid-State Circuits Conference

### Programmable and Reconfigurable Soft Engineered Systems Laboratory (PARSES)

Boston, MA

RESEARCH ASSISTANT

July 2025 - Present

- Principal Investigator: Kris Dorsey
- Engineered electronics hardware for 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°
- Assisted 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
- Evaluated 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: James Vedral (Presently Chief Technology Officer of KRI), Kevin Xu, 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 5mΩ 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

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### Renesas Electronics Corporation

Boston, MA

#### FIELD APPLICATION ENGINEER

January 2025 - Present

- Delivered 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
- Hosted monthly distributor meetings in regional branches to generate awareness of potential solutions for over 100+ customers in the region
- Provided consultations, application guidance, and on-site engineering support for 20+ customer opportunities on Programmable Mixed-Signal GreenPAK™, Discrete GaN, Inductive Position Sensing, and other Analog/Power products
- Collaborated 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 custom electropermanent magnets
- Informed design improvements based on magnetic field characterization and system response of 3 new magnet 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

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### EECE 2150: Circuits and Signals: Biomedical Applications

Boston, MA

#### TEACHING ASSISTANT

September 2025 - Present

- Course Instructor: Prof. Nicol McGruer
- Lead lab section for understanding of application of passive components and introduction of active components such as Operational Amplifiers, Instrumentation Amplifiers, and Light Emitting Diodes
- Graded assignments of weekly homework and quizzes for over 50 students
- Supported 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
- Instructed 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

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### Northeastern University Housing and Residential Life

Boston, MA

#### RESIDENT ASSISTANT

August 2022 - Present

- Planned, budgeted, and executed monthly events for 150+ undergraduates, fostering a sense of community
- Completed bi-annual leadership training on maintaining student safety and well-being as well as conflict control
- Served 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: Dean 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

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### 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, Mathematica, Python, LaTeX
- **Software Tools:** Adobe Suite, Asana, Git, Jira, Google Workspace, Microsoft 365, Slack, Windows, Linux, UNIX, Visual Studio Code

## Professional Affiliations

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### 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