# Kenneth Witham

kenneth.witham@outlook.com | (760) 608-1013 | 204 Barabara Ave., Ridgecrest, CA 93555

## OVERVIEW

Software engineer, technical leader, and innovator specializing in embedded systems, machine learning, and radio communications. Ph.D. candidate in Electrical and Computer Engineering while leading research and development teams at Northeastern University's Kostas Research Institute. Experienced in developing and deploying products for government and military funded programs, with expertise ranging from embedded sensor systems to full-stack software solutions. Track record includes peer-reviewed publications and provisional patents. Proven ability to secure funding and deliver results across academic, government, and commercial projects.

## EDUCATION

2022 – Present **Northeastern University** Boston, MA
**Ph.D. Electrical and Computer Engineering (ABD – All But Dissertation)**
Dissertation: "Radio-Focused Machine Learning & Embedded Deployments"
Advisor: Dr. Gunar Schirner

2020 – 2022 **Northeastern University** Boston, MA
**M.S. Electrical and Computer Engineering**
Thesis: "Deep Convolutional Neural Network Architecture with Wireless Domain-Specific FIR Layers for Modulation Classification"
Advisor: Dr. Kaushik Chowdhury
Concentration: Computer Systems and Software

2013 – 2017 **Wentworth Institute of Technology** Boston, MA
**B.S. Computer Engineering**
Dean's List, Magna Cum Laude, Arioch Merit Scholarship Recipient

## EXPERIENCE

06/2019 – Present **Kostas Research Institute (KRI)** **Northeastern University**
**Software Engineer** Burlington, MA
- Conducted cutting-edge research on government and military programs in the areas of radio communications, signal processing, machine learning, and geospatial analysis.
- Collaborated with other researchers, professors, and students on research projects.
- Authored and collaborated on research proposals for government and internal funding.
- Led engineering teams in developing and testing products for market.
- Developed embedded software for field deployed products.
- Designed software systems including embedded sensor and full stack software.

09/2017 – 06/2019 **NAVAIR NAWCWD** **Department of Defense**
**Electrical and Embedded Software Engineer** China Lake, CA
- Developed firmware and software for embedded DSP devices.
- Integrated software and devices with a larger system designed by a team.
- Developed software signal processing algorithms.
- Designed schematics and laid out circuit boards.

07/2014 – 09/2017 **NAVAIR NAWCWD** **Department of Defense**
**Electrical Engineer** China Lake, CA
- Developed firmware and software for embedded DSP devices.
- Designed, executed, and analyzed product field tests.

- Designed hardware and software systems.
- Prototyped designs for field testing.

04/2017 - 01/2019 **Co-Founder and Lead Software Developer** **Kwidil, LLC**
Boston, MA

- Designed and developed user interfaces for Windows applications.
- Designed, programed, and deployed web APIs with ASP.NET Core to interface with PostrgreSQL servers on the Google Cloud Platform.
- Collaborated in a team environment on multiple production and development code bases.

09/2014 - 08/2017 **Tech Spot** **Wentworth Institute of Technology**
**IT Technician** Boston, MA

- Provided technology service to users on and off campus.
- Interacted with users and resolved issues both in person and over phone/email.
- Managed other student technicians.

## HONORS, AWARDS, CERTIFICATIONS, AND PUBLICITY

2024 Featured in Defense Virtual Information Distribution: "Repair Technology Exercise (REPTX) Distance support"

2013-2017 Arioch Merit Scholarship, Wentworth Institute of Technology

## PEER-REVIEWED PUBLICATIONS

1. **K. L. Witham**, N. M. Prabhu, A. Sultan, M. Necsoiu, C. Spooner, and G. Schirner, "Utilizing terrain-generation to derive realistic channel models for automatic modulation recognition," in Synthetic Data for Artificial Intelligence and Machine Learning: Tools, Techniques, and Applications II, SPIE, Jun. 2024, pp. 450–461. doi: 10.1117/12.3013507.
2. N. Rashvand, **K. Witham**, G. Maldonado, V. Katariya, N. Marer Prabhu, G. Schirner, H. Tabkhi, "Enhancing Automatic Modulation Recognition for IoT Applications Using Transformers," IoT, vol. 5, no. 2, Art. no. 2, Jun. 2024, doi: 10.3390/iot5020011.
3. **K. Witham**, C. Robb, and D. Tahmoush, "Deep neural networks for detecting anomalies in unintended radiated emissions," in Unmanned Systems Technology XXV, SPIE, Jun. 2023, pp. 285–296. doi: 10.1117/12.2666271.
4. D. Tahmoush and **K. Witham**, "UAV micro-Doppler recognition comparison of HeRM lines versus blade flash phenomenology," in Radar Sensor Technology XXVII, SPIE, Jun. 2023, pp. 250–256. doi: 10.1117/12.2666269.

### PATENTS AND INTELLECTUAL PROPERTY

1. US Patent No. 12,196,866, "System for Closed-Loop GNSS Simulation", inventors M. Kling, D. Lau, **K. Witham**, and P. Closas, 01/14/2025
2. U.S. Provisional Patent Application No. 63/705,491, "Resilient Long-Range and Low-Bandwidth Mesh Networking Communications", inventors F. Cuckov, **K. Witham**, E. Yeh, and J. Gagnon, 10/09/2024
3. U.S. Provisional Patent Application No.: 63/740,730, "System and Method for Remote Environmental Monitoring and Resilient Communications in Challenging Environments", inventors F. Cuckov, **K. Witham**, E. Yeh, and J. Gagnon, J. Treadway, J. Vedral, 12/31/2024
4. U.S. Provisional Patent Application No. 63/745,883, "NIMOY – Workplace Sensor Network and Intelligence", inventors F. Cuckov, **K. Witham**, E. Yeh, and J. Gagnon, J. Treadway, J. Vedral, 01/16/2025

5. U.S. Provisional Patent Application No. 63/751,622, "(OMNIBUS) System and Method for Remote Environmental Sensing aboard Naval Vessels using Rugged Sensors and Resilient Communications (ANTENNAE)", inventors F. Cuckov, **K. Witham**, E. Yeh, and J. Gagnon, J. Treadway, J. Vedral, 01/30/2025

## FUNDING

### GRANTS AND AWARDS

1. F. Cuckov (PI), **K. Witham (Co-PI)** – "Resilient Long-Range and Low-Bandwidth Mesh Networking Communications", *Northeastern University Center for Research Innovation Spark Fund*, pending, $50,000
2. D. Luzzi (PI), F. Cuckov (Principal Technical Lead), **K. Witham (Software Lead)**, J. Gagnon (Hardware Lead), E. Yeh (Embedded Systems Lead) – "NIMOY – A C5ISR Architecture for Enhanced Operational Domain Awareness", *KRI at Northeastern University*, award period 2024-2025, $853,376

## SERVICE

### SERVICE TO THE PROFESSION

**Conference Review**

- IEEE International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS 2023, 2024)

### SERVICE TO THE COMMUNITY

**STEM Education and Outreach**

- Volunteered at CodeWarriors children's program, 10/2018

## PROFESSIONAL DEVELOPMENT

**RadarConf 2024, 5/4 – 5/9/2024**

- Radar Boot Camp

**SPIE DCS Conference, 4/20 – 4/24/2024**

- Poster presenter and panels attendee

**DAC 2023 Conference, 7/9 - 7/13/2023**

- Paper presentations and panels attendee

**Embedded Linux with Yocto, The Linux Foundation, 2018**

- Training on designing and building custom Linux distributions using the Yocto project