

# John Buczek

✉ buczek.j@northeastern.edu 🌐 buczek-j 🌐 john-buczek.com 📞 203-501-6184

## EDUCATION

---

### Northeastern University

Boston, MA

*BSMS Electrical Engineering; concentration in Power Systems; minor in Mathematics*

Dec. 2021

- Relevant Courses: Circuit and Signals, Embedded Design, Electronics 1-2, Linear Systems, Networks, Electromagnetics, Noise and Stochastic Processes, Robotics, Power Electronics, Electromagnetic Devices, Machine Learning, Power Systems Analysis 1, Network Programming, Advanced Power Electronics, Linear Systems Analysis, Power Systems State Estimation
- Honors: Dean's List, Dean's Scholarship, IEEE-HKN, GPA: 3.898 / 4.000

## EXPERIENCE

---

### Northeastern University - WiNES Lab

Boston, MA

*Research Assistant*

Nov. 2019 - Present

- Integrate Unmanned Aerial Systems with cutting edge wireless technologies
- Develop and test distributed control UAV flight algorithms and simulations for position optimization
- Evaluate Wake up Radios for wireless sensor power saving applications
- Programmed and implemented a full OSI stack for Software Defined Radios using an OFDM scheme

### Northeastern University - EECE Department

Boston, MA

*Teaching Assistant*

June 2020 - April 2021

- Provided supplementary instruction for electronics basics to Northeastern University Undergraduates
- Facilitated remote learning by performing and recording laboratory experiments
- Graded lab reports and other submitted assignments timely and reliably

### Littelfuse

Beverly, MA

*Electrical Engineering Co-op*

Jan. 2019 - June 2019

- Manufactured and tested application circuits of new semiconductor designs
- Programmed semiconductor testing equipment for thermal resistance and isolation characteristic tests
- Performed failure analysis for non-compliant components
- Conducted statistical evaluations on iterations of different production stages

## ACADEMIC PROJECTS

---

### Capstone: Aerial Deployment and Reintegration of Drones

May 2019 - Present

- Design DC-DC power converter circuitry for on-board computers, micro-controllers, and sensors
- Provide PCB design services including footprint development, component placement, RF impedance calculations, trace routing, design review, Gerber generation, and documentation
- Develop sensor monitoring systems to measure drone component fatigue using vibration FFT machine learning algorithms
- Program drone missions, vehicle-to-vehicle communication, and sensor nodes with ROS

### Learn to Fly

Jan. 2018 - Present

- Co-founded and teach a class on how to build and fly drones
- Compete in the annual Collegiate Drone Racing Association flying tournaments
- Conduct club outreach to attract new members and company sponsors
- Manage project spending and logistics

## SKILLS

---

- Bench Equipment Competence, PCB Design and Assembly, Software Defined Radio Configuration, Highly Self-Motivated, Patient Debugging
- CAD Software: PSIM, Altium, KiCAD, PSpice, LTSpice, SolidWorks, GNU Radio
- Programming languages: Python, C++, MATLAB

## PUBLICATIONS

---

- H. Cheng, L. Bertizzolo, S. D'Oro, J. Buczek, T. Melodia, and E. S. Bentley "Learning to Fly: A Distributed Deep-Reinforcement Learning Framework for Software-Defined UAV Network Control," IEEE Open Journal of the Communications Society, 2021.
- L. Bertizzolo, T. X. Tran, J. Buczek, B. Balasubramanian, Y. Zhou, R. Jana, and T. Melodia, "Streaming from the Air: Enabling High Data-rate 5G Cellular Links for Drone Streaming Applications," arXiv:2101.08681 [cs.NI], 2021
- J. Buczek and V. Ivankevych. "Practical Utility PV Multilevel Inverter Solutions," arXiv:2101.11524 [eess.SY], 2021