

# Ryan McKnight

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## Experience

- **Ohio University Avionics Engineering Center**

*Research Assistant*

**Athens, OH**

*December 2017 – Present*

- Participate in a small team of students and faculty to design, develop, and operate the Bobcat-1 CubeSat
- Develop and test satellite on-board firmware using FreeRTOS with an Atmel AT32 microcontroller
- Write firmware to interface with NovAtel OEM719 GNSS receiver
- Implement data collection for GNSS inter-constellation timing offset experiments
- Perform link budget analysis for communications link between satellite and ground station
- Assist with design and construction of cubesat ground station antenna, rotator, and transceiver system
- Coordinate with NASA and NanoRacks to complete safety approval and licensing documentation
- Research feasibility of pulsar observations using a 2 meter diameter dish antenna
- Use MATLAB to create data simulations to test pulsar observation algorithms

- **Northrop Grumman**

*College Intern Technical*

**San Diego, CA**

*May 2020 – August 2020*

- Operate, troubleshoot, and test LN-251 and KN-4074 embedded GPS/INS navigation units
- Assist with replication of aircraft navigation system for a lab bench setup
- Collect and analyze data using MATLAB and Python to verify correct operation of system
- Perform truck testing of system to verify mobile operation in preparation for flight testing
- Make updates to test procedures and related documentation, generate test reports

- **Athens Technical Specialists**

*Engineering Intern*

**Athens, OH**

*September 2016 – July 2019*

- Design and lay out printed circuit boards using Altium Designer
- Write firmware using C for Texas Instruments MSP430 family microcontrollers
- Design custom injection molded product enclosures using SolidWorks
- Use 3D printers for rapid prototyping of parts
- Use SolidWorks and AutoCad to create and edit electrical and mechanical drawings

- **SPOT Engineering**

*Engineering Intern*

**Lancaster, OH**

*March 2014 – June 2018*

- Build, troubleshoot, and repair automated machinery used in General Electric lighting plants
  - Design and build industrial control panels containing PLCs and variable frequency motor drives
  - Build and repair printed circuit boards
  - Debug and update firmware written in C for devices containing Motorola HC12 family microcontrollers
  - Draft and edit electrical and mechanical drawings using SolidWorks and AutoCad
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## Skills and Qualifications

- Current DoD secret level security clearance
  - Experience with inertial, satellite, and integrated navigation system principles including Kalman Filters
  - Programming experience with languages including C, Python, MATLAB, Simulink, C++, and Bash
  - Writing firmware for TI MSP430, Motorola HC12, Microchip PIC, and Atmel AT32 microcontrollers
  - Experience with GNU Radio and software defined radios such as USRPs
  - Licensed amateur radio extra
  - Basic knowledge of systems engineering, software certification, and DO-178C compliance
  - Extensive Linux experience
  - Advanced experience with CAD packages including AutoCad, SolidWorks, and Altium Designer
  - Through hole and surface mount soldering and rework
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## Education

- **Ohio University Russ College of Engineering**

*Ph.D. Electrical Engineering and Computer Science, 4.00 GPA*

**Athens, OH**

*May 2019 – (Expected) August 2023*

- Coursework: Inertial Navigation Systems, Satellite Navigation Systems, Integrated Navigation Systems, Satellite Communication Systems, Radar/Lidar Systems, Aviation Standards and Software Certification

*B.S. Electrical Engineering, 3.99 GPA*

*August 2016 – May 2019*

- Electives: Electronic Navigation Systems, Feedback Control Theory, Antenna and Microwave Theory
- Treasurer for both IEEE and Eta Kappa Nu, active member of Tau Beta Pi