# Matthew Heim

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## EDUCATION

**Northeastern University,** College of Engineering, Boston, MA **Expected December 2020**

- BS, Computer Engineering
- Dean's Scholarship
- **GPA: 3.6**

***Relevant Courses:*** Wireless Sensor Networks and the Internet of Things, Computer Architecture, Robotics Sensing and Navigation, Machine Learning, Computer Graphics, Digital Logic and Computer Organization, Computer Systems, Engineering Algorithms, Networks, Embedded Design, Probability and Statistics.

## TECHNICAL WORK EXPERIENCE

**Intel Corporation**, Hudson, MA, *IP RTL Logic Design Co-op* **Jan 2020 – Jun 2020**

- Used SystemVerilog on a Linux system to learn and improve on the structure of an existing hardware IP. Debugged hardware code errors marked by Synopsys SpyGlass.

**Northeastern University ECE Department**, Boston, MA, *Embedded Design Teaching Assistant* **Sep 2018 – Oct 2019**

- Assisting in running the lab for the Embedded Design course with Prof. Julius Marpaung. The course teaches students about programming software and hardware in an embedded Linux environment.
- Improved at helping multiple groups at the same time with technical problems during labs and coursework.

**BAE Systems**, Burlington, MA, *Technical R&D Co-op* **Jan 2018 – Aug 2018**

- Research and Development in controls, estimation, learning, and autonomy.
- Used Python and OpenAI Gym to develop a defense-related multi-agent reinforcement learning simulation environment.
- Assisted a small group with C++ programming for a game theoretic scenario.

**Mercury Systems**, Chelmsford, MA, *Summer Intern* **Jun – Aug 2015 and 2016**

- Composed a user guide for a developing web tool for managing Mercury products (2015). Used Excel and requirements traceability to organize board requirements and assisted in writing a bash shell script for testing compliance of boards to a government standard (2016). Developed bash scripts in a Linux environment.

## SPECIALIZED SKILLS

**Programming Languages:** Python (primary), C++, C, Verilog, MATLAB, Bash
**Programs:** Embedded Linux, ROS, Excel, AutoCAD, SOLIDWORKS, Simulink, SPICE

## RECENT PROJECTS

**Capstone Project: Pokémon with BCI** **Jun 2020-present**

- Applying a steady state visual evoked potential (SSVEP) based brain-computer interface (BCI) to allow physically-disabled people, such as with ALS, to play a video game.
- Using an EEG and canonical correlation analysis (CCA) to detect when a user is gazing on one of eight icons representing a command to the game with a latency of ~1s.

**Human Detection with LIDAR** **Spring 2019**

- Used basic Machine Learning techniques on input point cloud data to detect human-like clusters. Used an autonomous car with multiple LIDAR sensors, working with a small team.