

Nicholas Selby  
77 Massachusetts Avenue | Room 1-007 | Cambridge, MA 02139  
[nselby@mit.edu](mailto:nselby@mit.edu) | [selby.mit.edu](http://selby.mit.edu)

## EDUCATION

---

<b>Massachusetts Institute of Technology</b> • Ph.D. Mechanical Engineering	<b>June 2021</b>
<b>Massachusetts Institute of Technology</b> • M.S. Mechanical Engineering	<b>June 2018</b>
<b>Georgia Institute of Technology</b> • B.S. Mechanical Engineering • Mathematics Minor • Highest Honors	<b>May 2016</b>

## SELECTED EXPERIENCE

---

<b>Massachusetts Institute of Technology</b> , Cambridge, MA	<i>Research Assistant since January 2018</i>
--	--

- Innovating in **advanced manufacturing** workforce development by building robotic education platform
- Developed novel, cloud-based “TeachBot” system with ROS and Node.js, **patent pending**
- **Submitted** work to subject-specific international conference
- Research presentation **won Runner-Up** at MIT research exhibition

<b>MIT Media Lab</b> , Cambridge, MA	<i>Research Assistant, August 2016 – December 2017</i>
--------------------------------------	--

- Innovating in **wireless networking technologies** to enable accurate sensing using wireless signals
- Developed novel drone-mounted wireless communication relay for warehouse inventory control, **patent pending**
- Created new signal processing techniques, **outperforming state-of-the-art by 20x**
- **Published** and demonstrated work at two subject-specific international conferences

<b>Brown Water Laboratory</b> , Atlanta, GA	<i>Research Assistant, Summer 2016</i>
---	--

- Implemented **machine learning** algorithms for **public health** applications
- Developed **novel, low-cost PCB** device monitoring water quality for deployment in developing countries
- **Wrote software** for novel infant anthropometric device for deployment in USAID sites worldwide
- Deployed low cost disease vector tracking device in Mozambique using **computer vision**

<b>Airdash, LLC</b> , Atlanta, GA	<i>Founder, May 2015 – May 2016</i>
-----------------------------------	-------------------------------------

- **Launched startup with \$20,000** seed funding developing high altitude wind turbines
- Created **CFD** model of turbine to optimize aerobody shapes
- **Prototyped** 7 ft. diameter scale model for **wind tunnel testing** of aerodynamics and stability
- **Worked directly with stakeholders** such as Georgia Power, the State Department, and the Kenyan government

<b>Georgia Institute of Technology</b> , Atlanta, GA	<i>Research Assistant, August 2014 – July 2016</i>
--	--

- Studied nonlinear acoustic waves using **MATLAB** and experimentation with **laser and transducer technology**
- **Developed novel technique** to calibrate equipment measuring integrity of structures
- **Published** and defended work at subject-specific national conference

<b>Sandia National Laboratories</b> , Albuquerque, NM	<i>Research Assistant, Summer 2013</i>
---	--

- **Designed, prototyped, and demonstrated** novel *fractional quantum hall effect* sensor for use in quantum physics
- Simulated with **MATLAB and CAD** software and manufactured with **CNC machining**
- **Published** article in *American Institute of Physics* journal, *Review of Scientific Instruments*

<b>Jet Propulsion Laboratory</b> , Pasadena, CA	<i>Research Assistant, May 2013 – May 2014</i>
---	--

- **Constructed hexacopter** drone for topographical mapping
- Compiled data on power systems for **glacial, deep-sea, volcanic, and asteroid robotics**
- Generated power system options overview analysis for **presentation and publication**

## PUBLICATIONS, PATENTS, & CONFERENCE PRESENTATIONS

---

- Y Ma, **NS Selby**, and F Adib. "Methods and Apparatus for Wideband Localization." U.S. Patent Application No. 15/936,078, filed March 26, 2018.
- Y Ma, **NS Selby**, and F Adib, "Minding the Billions: Ultra-wideband Localization for Deployed RFIDs," *ACM Annual International Conference on Mobile Computing and Networking*, Snowbird, UT, USA, 2017.
- Y Ma, **N Selby**, and F Adib. "Methods and Apparatus for Analog Relay." U.S. Patent Application 15/894,901, filed February 12, 2018.
- Y Ma, **NS Selby**, and F Adib, "Drone Relays for Battery-Free Networks," *ACM Conference on Applications, Technologies, Architectures, and Protocols for Computer Communication*, Los Angeles, CA, USA, 2017.
- D Torello, **NS Selby**, J Kim, J Qu, and LJ Jacobs, "Determination of Absolute Material Nonlinearity with Air-Coupled Ultrasonic Receivers," *Ultrasonics*, 2017.
- NS Selby**, D Torello, JY Kim, LJ Jacobs, "Calibration of Air-Coupled Transducers for Absolute Nonlinear Ultrasonic Measurements," *Review of Progress in Quantitative Nondestructive Evaluation*, Atlanta, GA, USA 2016.
- D Torello, **NS Selby**, J Kim, J Qu, and LJ Jacobs, "Determination of Absolute Material Nonlinearity in Aluminum and Fused Silica with Air-Coupled Ultrasonic Receivers," *Review of Progress in Quantitative Nondestructive Evaluation*, Atlanta, GA, USA 2016.
- NS Selby**, M Crawford, L Tracy, JL Reno, and W Pan, "in-situ Biaxial Rotation at Low Temperatures in High Magnetic Fields," *Review of Scientific Instruments*, 85, 095116 (2014); doi: 10.1063/1.4896100.
- NS Selby** and N Daley, "Simulation and Optimization of Car Design," *ASME 2014 International Design & Engineering Technical Conferences & Computers & Information in Engineering Conference*, Buffalo, NY, USA, 2014.

## AWARDS

---

- Runner-Up. *MIT Mechanical Engineering Research Exhibition*. 2018.
- National Science Foundation Graduate Research Fellowship Honorable Mention. *NSF*. 2016.
- Best Oral Presentation. Undergraduate Research Symposium. *Georgia Institute of Technology*. 2016.
- Richard K. Whitehead Jr. Memorial Award. Awarded to top three ME seniors. *Georgia Institute of Technology*. 2016.
- President's Undergraduate Research Award. *Georgia Institute of Technology*. 2015.
- Best Utility Simulation for Product Design. *American Society of Mechanical Engineers*. 2014.
- Stamps President's Scholarship. Merit-based, full cost of attendance scholarship to top 12 of 14,000 applicants. 2012.

## SKILLS

---

<b>Programming</b>	Python (incl. TensorFlow, ROS, NumPy), C/C++, C#, Java (incl. Android), MATLAB and Simulink, JavaScript (incl. Node.js), LabVIEW
<b>Prototyping</b>	CAD, FEA, CFD, PCB design, Soldering, CNC and Conventional Machining, MIG and TIG Welding, Waterjet Cutting, Laser Cutting, Plasma Cutting, 3D Printing
<b>Miscellaneous</b>	Robotics and Control, Machine Learning, Networking, DFMA, Public Speaking, Teaching