# Peter A. York

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## Education

**Ph.D. in Engineering Sciences**, Harvard University, Spring 2020 (expected)

Dissertation: *Millimeter-sized piezoelectric actuators and medical devices*
Advisor: Robert J. Wood

**M.S. in Engineering Sciences**, Harvard University, Spring 2017

**B.Eng in Mechanical Engineering**, Vanderbilt University, Spring 2014, Summa Cum Laude

## Journal Articles

[J1] H. Wang, **P. A. York**, Y. Chen, S. Russo, T. Ranzani, C. Walsh, and R. J. Wood, "Biologically-inspired electrostatic artificial muscles for insect-sized robots," 2020, In preparation.

[J2] **P. A. York**, N. T. Jafferis, and R. J. Wood, "Millimeter-sized piezoelectric flextensional actuators with improved mechanical efficiency," 2019, In submission.

[J3] **P. A. York**, N. T. Jafferis, and R. J. Wood, "Meso scale flextensional piezoelectric actuators," *Smart Materials and Structures*, vol. 27, no. 1, p. 015 008, 2017.

[J4] P. J. Swaney, **P. A. York**, H. B. Gilbert, J. Burgner-Kahrs, and R. J. Webster III, "Design, fabrication, and testing of a needle-sized wrist for surgical instruments," *ASME Journal of Medical Devices*, 2016.

## Conference Papers

[C1] S. A. Bothner†, **P. A. York**†, P. C. Song, and R. J. Wood, "A compact laser-steering end-effector for transoral robotic surgery," in *IEEE International Conference on Intelligent Robots and Systems*, 2019.

[C2] **P. A. York** and R. J. Wood, "Nitinol living hinges for millimeter-sized robots and medical devices," in *IEEE International Conference on Robotics and Automation*, 2019, pp. 889–893.

[C3] **P. A. York** and R. J. Wood, "A geometrically-amplified in-plane piezoelectric actuator for mesoscale robotic systems," in *IEEE International Conference on Robotics and Automation*, 2017, pp. 1263–1268.

[C4] **P. A. York**, P. J. Swaney, H. B. Gilbert, and R. J. Webster III, "A wrist for needle-sized surgical robots," in *IEEE International Conference on Robotics and Automation*, 2015, pp. 1776–1781.

†: shared first-authorship

[C5] D. P. Losey†, **P. A. York**†, P. J. Swaney, J. Burgner, and R. J. Webster III, "A flexure-based wrist for needle-sized surgical robots," in *SPIE Medical Imaging*, 2013.

## Grants

**DARPA "SHRIMP: An Integrative Exploration of Actuation and Power Systems for Microrobots"** ($1,231,000, 9/2018-9/2021). I contributed to the initial ideation and helped draft the technical aims for this grant proposal.

**Army Research Office DURIP "A Scanning Laser Doppler Vibrometer for Characterizing and Optimizing High Performance Materials, Actuators, and Impulsive Systems"** ($275,000, 6/2016-7/2016). I conducted significant background research and co-wrote all portions of this grant proposal with my dissertation advisor.

## Patents

[P1] P. J. Swaney, **P. York**, H. B. Gilbert, R. J. Webster III, A. W. Mahoney, and P. Wellborn, *Surgical device tip with arc length varying curvature*, US Patent App. 16/176,068, Mar. 2019.

## Honors and Awards

**NSF Graduate Research Fellowship** (2014-2017)

**Undergraduate Awards:** Design and Controls Award (2014), Senior Design Team Award (2014), Cornelius Vanderbilt Scholar (2010-2014)

## Teaching

**Laboratory Electronics, Harvard University** **2017-2019**
I taught this wide-ranging electronics course in Summer 2019. In evaluations (available on request), students unanimously described the course as "outstanding" and "strongly agreed" that I was an effective teacher. The course covers the essentials of analog, digital, and micro electronics, culminating in the construction of a micro computer from raw integrated circuits. I previously served as a teaching assistant for the Summer 2017 and Spring 2018 versions of the course.

**Engineering the Acoustical World, Harvard University** **2018**
For this new course taught by my dissertation advisor, I devised an experimental setup to measure the vibrations in a guitar body that result from different strings being plucked. The visualizations that I created from the measurements were part of a lesson on standing waves and Hemholtz resonators.

**The Joy of Electronics, Harvard University** **2016**
I helped students in this project-based electronics course learn the fundamentals of digital and analog electronics through hands-on lab exercises.

**Computer Aided Design, Vanderbilt University** **2013**
I held office hours and graded weekly assignments for this introductory course. Students learned the basics of 3D solid modeling by completing weekly assignments of increasing complexity, culminating in an end-of-term capstone project.

## Mentorship

### Graduate students

Simon Bothner, MS, *A Snap-on Module for Endoscopic Rapid Scanning Laser Phonosurgery*

## Professional Activities and Service

**Memberships** IEEE Student Member, Tau Beta Pi
**Technical Reviews** Annals of Biomedical Engineering, IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Robotics, Smart Materials and Structures, IEEE/RSJ IROS