Julian Leland Bell

Education

Massachusetts Institute of Technology, Cambridge, MA — Sept. 2015 – Sept. 2017
Master of Science in Mechanical Engineering. Cumulative GPA: 5.0/5.0
Relevant Coursework: Feedback Control Systems, Precision Product Design, Mechatronics, Nonlinear Control

Swarthmore College, Swarthmore, PA — Aug. 2008 – May 2012
Bachelor of Science in Engineering (mechanical concentration), minor in Public Policy. Cumulative GPA: 3.60/4.0
Relevant Coursework: Senior Design Project (Self-Replicating Milling Machine), Machine Design (independent study), Control Theory & Design, Mechanics of Solids, Embedded Systems Design

Selected Technical Experience

Mechanical Engineer, R&D Systems — Nov. 2017 – Present
Desktop Metal, Burlington, MA
- Developing novel metal additive manufacturing processes as part of Advanced R&D division.

Research Assistant — Sept. 2015 – Sept. 2017
Mediated Matter Group, MIT Media Lab, Cambridge, MA
- Supported development of the Digital Construction Platform (DCP) v.2 platform, a large-scale micro-macro manipulator arm for construction applications. Project lead F2016-2017.
- Responsible for project & personnel management; high-level definition of DCP system architecture; development and implementation of mechatronics, control systems and software toolchain for DCP system.
- Successfully 3D printed 14.6 m diameter dome section using DCP in July 2016.
- Related Publication: S. J. Keating, **J. C. Leland**, L. Cai, N. Oxman, Toward site-specific and self-sufficient robotic fabrication on architectural scales. *Science Robotics*, 2, 2017.

Mechanical Engineer — Oct. 2012 – June 2015
Barrett Technology, Newton, MA
- Responsible for development of mechanical designs and assemblies, sourcing of components and suppliers, interfacing with customers, and maintaining tooling and facilities.
- Major roles in development of Proficio rehabilitation robot and Perception Palm sensor suite (lead mechanical designer).
- Led & supervised mechanical engineering interns during summer internship periods in 2013 and 2014.
- Related Publication: Townsend, et. al. 2014. Multi-active-axis, non-exoskeletal rehabilitation device. U.S. Patent Application 14/500,810, filed 2014-09. Patent pending.

Student Researcher — May 2010 – Aug. 2010
National Institute of Standards and Technology, Gaithersburg, MD
- Worked to quantify and improve performance of experimental micro-scale machine tool.
- Developed simulation & CAD models of machine; designed & fabricated metrology components for machine; characterized machine positioning accuracy & repeatability, analyzed measurement uncertainty (ISO 230-9).
- Developed compensation tables for X and Y axes, improving positioning accuracy from 10 μm to <200 nm.

Certifications & Skills

Software:
- CAD: SolidWorks (incl. Simulation and Flow Simulation), Onshape, Autodesk Inventor.
- Programming Languages: MATLAB (incl. Simulink & Simulink Desktop Real-Time), Python, C.
- Other: Arduino IDE, KUKA WorkVisual (incl. RSI), Final Cut Pro, Adobe Creative Suite.

Fabrication: Proficient machinist with 8+ years' experience, including teaching and supervisory experience.
- CNC programming (HSMWorks, Prototrak Conversational, OMAX Layout/Make, others).
- Part inspection & metrology.
- Hand & power scraping (King-Way Scraping Consultants – certified 2016).

Engineer-In-Training (EIT), Pennsylvania, 2012.