

Peter Ascoli E.I.T.

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Education

- 2015-2017 **Massachusetts Institute of Technology**, Cambridge, MA, USA
◦ Master of Science, Mechanical Engineering, Design and Manufacturing, GPA 3.9/4.0, Graduate Research Fellowship
- 2011-2015 **The Cooper Union for the Advancement of Science and Art**, New York, NY, USA
◦ Bachelor of Engineering, Mechanical Engineering, GPA: 3.9/4.0, Full Tuition Scholarship

Experience

- Aug. 2017 **Structures Engineer at Space Exploration Technologies (SpaceX)**, Hawthorne, CA, USA
Present *Dragon Structures Engineering*
◦ “Cradle to Grave” responsibility for multiple primary and secondary structures delivered to Dragon 2 (Crew Dragon)
◦ Design: Mass and stiffness driven composite and metallic structures. Drawings per ASME-Y-14.5-2009 w/ GD&T.
◦ Analysis: Developed loading methodology, built FEMs to iterate designs subject to static and dynamic loads, and performed cross-team design reviews verifying the meeting of design requirements.
◦ Test: Validated flight hardware through test setup design, ran static load cases, and wrote certification reports
◦ Build: Rapidly solved production-halting Dragon 1 and 2 build issues through repair suggestions, analysis, or test
- Sept. 2015 **Graduate Research Assistant at MIT**, Cambridge, MA, USA
June 2017 *Laboratory for Manufacturing and Productivity*
◦ Investigated sources of variation in roll-to-roll microcontact printing quality due to seamless tool manufacturing
◦ Simulation: Modeled thick film lithographic exposure of tool molds to develop the manufacturing process window
◦ Design/Build: Programmed a raster-scan exposure protocol to create photoresist molds, on which to centrifugally cast PDMS, forming seamless cylindrical stamps with desired micron-scale features. Built two microscopes to inspect and measure photoresist mold geometry, and to measure feature deformation under print pressures.
◦ Test: Quantified the variation in feature dimensions in each step from the analytical shape through print
- Jan. 2016 **Mentor at MIT MakerWorkshop**, Cambridge, MA, USA
June 2017 *Volunteer Shop Technician, Supervisor, and Mill Team Leader at MIT's first student run machine shop*
◦ Design/Build: Provided project guidance to students, faculty, and staff, while ensuring safety of shop users
◦ Management: Certified mill users through weekly trainings, and organized and taught a week-long CNC course
- May 2014 **Mechanical Design Engineer at NASA Kennedy Space Center**, Cape Canaveral, FL, USA
Aug. 2014 *Structures and Mechanisms Design Branch*
◦ Designed an Orion mass simulator concept using a weldment inside an OML mockup, and a now-in-use tripod hoist structure for securing the Orion Service Module Umbilical Plate during testing. 2014 NASA Intern of the Year Award.
- Sept. 2012 **Mechanical Designer and Fabricator**, New York, NY, USA
Apr. 2013 *New York City Artist MaDora Frey*
◦ Designed and fabricated a pair of electro-mechanical sculptures meeting an artist's concept for *communication* between two seemingly separate mechanisms. “Lure” shown in Trestle Gallery (Brooklyn, NY, 2014).

Projects

- Technical: **CNC Benchtop Lathe for Turning Steel and Aluminum with 50 Micron Precision**
◦ Used first principles solid mechanics to derive part stiffness requirements via an error budget. Designed three MDOF flexures to exactly constrain x and z feed systems. Made drawings, machined parts, and heavily contributed to feed and spindle system designs. Led team by creating schedules, dividing tasks, and holding design reviews.
- Academic: **Low-cost Device to Apply Dynamic Compressive Loads to Biomimetic 3D Tooth Scaffolds for Tuft's Dental School**
◦ A low cost, voice coil actuated dynamic loader for 12-well plates utilizing elastic average techniques and tight tolerances to hold 10% force control precision with less than 0.002 inches of error motions. Used by dental tissue researchers to quantify the benefit of dynamic loading, over static loading, towards specific tissue growths.
- 24 Hours: **Laser Cut Camera**
◦ Prototyped a DSLR-mounted focusing, aperture, & lens system. Cooper Union Hackathon 2014 *Most Technical Hack*.
- To Learn: **CNC BB8**
◦ Designed a hand-sized, passive, SDOF BB8 (Star Wars droid) using a copper ballasted pendulum, acrylic flexures, and a magnetically coupled head. CNC-machined all metallic components to improve CNC and CAM skills.

Skills

- Design: 3D modeling, finite element analysis, tolerance stackups, error budgets, machine design, and 2D drawings
- Making: Sketching, manual and CNC 3-axis mill, manual lathe, water jet, laser cutting, 3D printing, most hand and benchtop tools, composite layups, and basic electronics (ie. soldering, waveform generators & oscilloscopes)
- Software: SolidWorks, Autodesk Inventor, AutoCAD, PTC Creo, Siemens NX & Team Center, ANSYS, Abaqus, FEMAP with Nastran, HSMWorks, MATLAB, LaTeX, LabVIEW, Microsoft Office, and Adobe Photoshop, Adobe Illustrator