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 – Present **Structures Engineer at Space Exploration Technologies (SpaceX)**, Hawthorne, CA, USA
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 methodolgy, built FEMs (linear and non-linear) to iterate designs subject to static and dynamic loads, and performed cross-team design reviews verifying the meeting of design requirements.
- Test: Validated hardware with setup design, ran static load cases, correlated models, and wrote certification reports
- Build: Rapidly solved production-halting Dragon 1 and 2 build issues through repair suggestions, analysis, or test

Sept. 2015 – June 2017 **Graduate Research Assistant at MIT**, Cambridge, MA, USA
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 – June 2017 **Mentor at MIT MakerWorkshop**, Cambridge, MA, USA
Volunteer Shop Techician, 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 – Aug. 2014 **Mechanical Design Engineer at NASA Kennedy Space Center**, Cape Canaveral, FL, USA
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 – Apr. 2013 **Mechanical Designer and Fabricator**, New York, NY, USA
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 Compessive 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