Hannah Stroud

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Experience

M^{2}AESTRO Lab, Texas A&M University — College Station, Texas
Researcher — *Aug '16 – present*

Fort Wayne Metals — Fort Wayne, Indiana
Research and Development Intern — *Jun '18 – Aug '18*

Develop and test processing techniques for non-binary shape memory alloy materials. Characterize processed materials and evaluate material properties.

- Designed data processing tools in Matlab to efficiently extract key material properties.
- Drew difficult ternary shape memory alloy wire down below ten mil sizes.
- Discovered unique grain size behavior of iron-based alloy based on processing parameters.

Insitu, Inc. — Hood River, Oregon
Advanced Development Intern — *May '17 – Aug '17*

Calculate structural loads for developmental aircraft fuselage. Design structural test to validate structural integrity of fuselage under component loads. Design and manufacture custom fixtures for use during testing. Perform fuselage structural testing, take data, and analyze results. Use wing loading profile to develop whiffletree parameters and construct whiffletree fixtures. Develop design of experiment and perform adhesive bond strength tests and recommend an adhesive for the airframe in development. Assist engineers with projects as needed.

- Designed and modeled in Solidworks an additively manufactured part in use on Scan Eagle 3.
- Oversaw full lifecycle of fuselage structural test from load development, to fixture design, to test.
- Developed component load analysis tool in Excel.
- Completed internal technical documents still utilized in Scan Eagle 3 product development.

Mechanical Design and Flight Sciences Intern — *May '16 – Aug '16*

Learn traditional machining methods including water jet, CNC and manual mill, and TIG welding. Design and manufacture prototype parts and test fixtures. Assist engineers with component design and design for machinability.

- Led team in developing tool control procedure, helping teammate earn Six Sigma white belt.
- Machined and processed tool control parts deployed to sites in Afghanistan.
- Designed and machined fixtures for Advanced Development, leading to subsequent employment.

Mechanical Engineering Department, Texas A&M University — College Station, Texas
Additive Manufacturing Lab Technician — *Sep '15 – Dec '15*

Develop and plan concept student additive manufacturing lab. Recommend 3D printers based on experience in field. Set up, calibrate, and operate 3D printers. Develop printer guidelines for student use.

Engineering Activities and Student Affairs, Texas A&M University — College Station, Texas
Teaching Assistant — *Sep '15 – Dec '15*

Develop lesson plans and teach recitation sessions for Precalculus for Engineers. Design engineering-based "real world" math activities. Host office hours for one-on-one mentoring. Grade assignments and assist professor.

Buffalo Manufacturing Works — Buffalo, New York
Engineering Intern — *Jun '15 – Aug '15*

Develop innovative uses for manufacturing techniques, particularly additive manufacturing and robotics. Perform material analysis for materials used in the additive manufacturing process. Design and print parts for project work.

- Developed framework for future internship program (as company's first intern) that is still in use.
- Designed week-long mini-internship program for high school students and "hired" three interns.
- Earned forklift certification.

Aerospace Engineering Department, Texas A&M University — College Station, Texas
***CASMART Project* Student Researcher** — *Sep '15 – Dec '15*

Designed an experimental satellite using shape memory alloys as an actuation system for solar panels to replace hydraulic actuation systems typically utilized in satellites with a team of four. Modeled SMA torque tube angle vs. temperature in Matlab. Wrote design papers in the Consortium for the Advancement of Shape Memory Alloy Research and Technology (CASMART) and the ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS).

- Won 1st place CASMART student competition.

Please refer to my Linked-in profile for a more complete list of work experiences along with recommendations.

Education

Texas A&M University — College Station, Texas
Master of Science in Aerospace Engineering — *2018 – Present*
GPA: N/A

Focus on materials and structures with an emphasis on smart materials and structural optimization.

Texas A&M University — College Station, Texas
Bachelor of Science in Aerospace Engineering — *2014 – 2018*
Undergraduate GPA: 3.427
Major GPA: 3.417

Publications

In Conference Proceedings:

Experimental multiphysical characterization of an SMA driven, camber morphing owl wing section
H. Stroud, P.B.C. Leal, D. Hartl
SPIE Smart Structures and Nondestructive Evaluation, Denver, 2018

Skin-based camber morphing utilizing shape memory alloy composite actuators in a wind tunnel environment
P.B.C. Leal, H. Stroud, D. Hartl
2018 AIAA/AHS Adaptive Structures Conference, 0799

Design and fabrication of a shape memory-based bio-inspired morphing wing
P.B.C. Leal, H. Stroud, D. Hartl
VIII ECCOMAS Thematic Conference on Smart Structures and Materials SMART 2017

Design of a reconfigurable sma-based solar array deployment mechanism
R. Wheeler, R. Saunders, K. Pickett, C. Eckert, H. Stroud, T. Fink, K.Gakhar, J. Boyd, D. Lagoudas
ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems

Awards & Fellowships

Texas A&M University Graduate Diversity Fellowship
Texas A&M University — *2018 – Present*

Maryann and Gordon Gibson '55 Scholarship
Texas A&M University, Department of Aerospace Engineering — *2017 – 2018*

Joann and Edward "Pete" Aldridge '60 Scholarship
Texas A&M University, Department of Aerospace Engineering — *2014 – 2016*