

# Reed L. Brown

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## EDUCATION

**Brown University**, Sc.B. Mechanical Engineering (GPA: 4.0/4.0) **Providence, RI, Fall 2015 – Spring 2019**  
Graduated *magna cum laude* and with **Honors**; junior inductee to **Tau Beta Pi**

Relevant courses include:

- ENGINEERING: *Electricity and Magnetism; Thermodynamics; Electrical Circuits + Signals; Materials Science; Fuels, Energy, and the Environment; Advanced Fluid Mechanics; Heat and Mass Transfer; Aircraft Design (Capstone); Advanced Mechanics of Solids; Advanced Engineering Mechanics; Optics; Experimental Mechanics*
- OTHER: *Differential Equations 1 and 2; Statistics; Computer Science (MATLAB and Python); Chinese 100-400*

**Loch Raven High School** (GPA: 4.0/4.0) **Towson, MD Fall 2011 – Spring 2015**

- Salutatorian, National Merit Finalist, AP Scholar with Distinction, Class President (grades 10-12)

## ENGINEERING EXPERIENCE

**Raytheon IDS, Systems Engineer I** **Woburn, MA, June 2019 – Present**

- Develop demonstrations to teach radar concepts, using Arduino microcontrollers and DIY electronics
- Enhanced features of a radar demo (ultrasonic sensor on servo) using Java, C/C++, and the CAD software Creo
- Plotted real-time audio and its FFT using a USB microphone and Python (with Matplotlib and NumPy)
- Building an electronically-steerable acoustic phased array using Mathematica and a Raspberry Pi

**Brown University, Undergraduate Researcher** **Providence, RI**

*Interface Decohesion Research (Honors Thesis) with Prof. K. S. Kim in the School of Engineering* **Fall 2018 – Spring 2019**

- Built a software package to determine (in conjunction experimental interferometry data) the cohesive behavior of bimaterial interfaces under high strain rate impact loading
- Wrote MATLAB functions to automatically run and analyze Abaqus simulations of bimaterial plate impacts
- Presented software package in a written thesis and in an end-of-semester presentation to faculty and classmates

*Model Turbines Research with Prof. Shreyas Mandre in the School of Engineering* **Fall 2017 – Summer 2018**

- Awarded summer research funding to optimize the placement of wind turbines in an array
- Designed and manufactured a setup to calibrate small DC motors to be used as generators on model wind turbines
- Validated a simple and inexpensive method for measuring model wind turbine efficiency
- Presented findings to professors and students at a Brown University poster fair

**Differential Dynamics Corporation, Engineering Intern** **Baltimore, MD, Summer 2017**

- Designed and manufactured a demonstration sample of the company's proprietary "speed converter" gear assembly
- Analyzed power flow through the assembly by experiments, and wrote a paper and presented findings to investors and supervisors

## TEACHING EXPERIENCE (at Brown University)

**Senior Teaching Assistant for *Dynamics and Vibrations*** **Providence, RI, Spring 2018**

- Helped students reinforce understanding of elementary engineering mechanics concepts during weekly office hours
- Assisted in several design projects throughout the semester

**Workshop Peer Mentor for *Intro to Engineering* (3 Fall semesters)** **Providence, RI, Fall 2016 – Fall 2018**

- Trained two groups (per semester) of *Intro to Engineering* students in workshop skills, including machine shop and power tools, 3D printing, and laser cutting, by guiding them through several design projects
- Refined hands-on prototyping and manufacturing skills as well as interpersonal and teaching skills

**Course Grader for *Mechanics of Solids and Structures*** **Providence, RI, Fall 2018**

- Graded weekly homework assignments for the course using knowledge of solid mechanics concepts and problem-solving methods

**Undergraduate Teaching Assistant for *Fluid Mechanics*** **Providence, RI, Fall 2018**

- Guided students through exam review study sessions
- Assisted students in using the wind tunnel and employing fluid mechanics concepts during the course design project

**Teaching Assistant for *Physical Processes in Geology***

**Providence, RI, Fall 2016**

- Graded homework and lab assignments using knowledge of basic geological analysis tools
- Guided students through rock identification, map analysis, and geological inference labs

**COURSE PROJECTS**

- *Thermodynamics*: Designed and analyzed a **multi-stage seawater flash distillation system** using **MATLAB**, and optimized with respect to thermodynamic and economic considerations
- *Adv. Fluids*: Implemented the **source-panel method** to approximate the flow around an airfoil, using **MATLAB**
- *Comp. Sci.*: Programmed a script that performs **Gauss-Jordan elimination** on any matrix, using **MATLAB**
- *Comp. Sci.*: Programmed a script that measures **text similarity** based on grammar and style, using **Python**
- *Adv. Solids*: Designed and optimized a **3D-printed “smartphone” case**, using **MATLAB**, **SolidWorks**, and **Abaqus**
- *Heat and Mass*: Designed and analyzed a **double-walled “coffee cup”** to maintain fluid temperature, using **COMSOL**
- *Adv. Solids*: Implemented several static, dynamic, and modal **FEA simulations** in **ABAQUS**
- *Thesis*: Designed a horizontally-actuated **4-point bending test** for interferometry calibration, using **SolidWorks**

**ACTIVITIES**

**Tau Beta Pi, Executive Board Member**

**Providence, RI, Spring 2018 – Spring 2019**

- Coordinated a team of administrators and students in organizing an alumni mentoring brunch with over 130 guests

**Engineering Departmental Undergraduate Group, Co-Leader**

**Providence, RI, Fall 2017 – Spring 2019**

- Organized programs and events for engineering undergraduates, including a research fair and a T-shirt sale

**“The Critical Review,” Writer**

**Providence, RI, Spring 2017 – Spring 2018**

- Analyzed student-completed questionnaires to write aggregated reviews for Brown University courses

**SKILLS AND INTERESTS**

- **Languages**: Elementary proficiency in Spanish and Chinese
- **Computer skills**: Microsoft Office; MATLAB; Mathematica; Python; Java; C/C++; Abaqus; SolidWorks; Creo; Autodesk Fusion 360; LaTeX;
- **Engineering skills**: Machine shop and power tools; 3D printing; laser cutting; strain gauge installation; Arduinos
- **Interests**: Distance running, baseball, hiking, woodworking, pool, cooking