

# BENJAMIN CULMER

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<https://benjamin-culmer.github.io>

## EDUCATION

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<b>Dartmouth College</b> , Hanover, NH	<b>September 2016-June 2020</b>
<i>Bachelor of Engineering, Mechanical Concentration</i>	Major GPA 3.38/4.0
<i>Bachelor of Arts, Engineering Science</i>	GPA 3.29/4.0

## EXPERIENCE

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<b>University of Pennsylvania School of Medicine, Philadelphia, PA</b>	<b>June 2019 – August 2019</b>
<i>Research Assistant for the Penn PET Explorer (First Full Body PET Scanner)</i>	<b>December 2018 – March 2019</b>

- Assembled and wired an entire PET scanner from the ground up to learn about the system and build a product
- Diagnosed and repaired unknown defects in components through trouble shooting and testing using Linux
- Developed procedures and produced documentation for manufacturing and testing the Explorer
- Instructed others on manufacturing procedures, defined tasks, and delegated work
- Engineered and manufactured a method for safely mixing radioactive materials in a phantom using SolidWorks (CAD)

### **Dartmouth College, Thayer School of Engineering, Hanover, NH**

<i>Research Assistant</i>	<b>March 2019 – June 2019</b>
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- Researched alternative methods and materials to use in an artificial kidney system and performed a cost-benefit analysis
- Created 3d models of kidney systems from CT scans using Mimics software
- Built parts of the artificial kidney system and wrote a repeatable procedure for building future parts

### *Teaching Assistant*

<b>September 2019 – November 2019</b>
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- Graded homework for Dartmouth's course in Applied Mechanics: Dynamics

### **Kellogg, Hansen, Todd, Figel & Frederick, PLLC, Washington, DC**

<b>June 2017 – July 2017</b>
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### *Intern for the Litigation Division*

- Searched for evidence in up to 1,000 emails per day during the discovery phase of legal cases
- Wrote memoranda for Associates and Partners presenting findings and documentation on information found in discovery
- Attended case interviews with potential witnesses and took notes

## HIGHLIGHTED SKILLS

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- Programming Languages: ANSI C, MATLAB, and VHDL
  - Computer-Aided Design Software: SolidWorks (CSWA Certified), xDesign
  - Foreign languages: German (exchange student in high school)

## ENGINEERING PROJECTS AT DARTMOUTH COLLEGE

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<b>Marine Chronometers</b> , Computer-Aided Mechanical Engineering Design, group	<b>Spring 2020</b>
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- Designed a complete working marine chronometer in xDesign (CAD) made entirely of group designed parts
- 3D printed the marine chronometer using PLA, achieving  $\pm 1$  second precision over 10 seconds
- Voted group leader: communicated with TAs, divided work, assigned tasks, troubleshoot issues, and managed overall assembly
- Created the overall design of the chronometer, building a modular aesthetically pleasing displayable product
- Earned an award for designing a chronometer with the "most risky, cutting edge, and out of the box design innovations"

### **Microplate Gripper**, Engineering and Design Methodology, group

<b>Fall 2019</b>
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- Designed and hand built a gripping mechanism to pick up microplates from a drone with a 5mm sphere of uncertainty
- Designed two test stands to simulate drone flight in order to test our gripping mechanism
- Created parts in SolidWorks (CAD), modified them with Finite Element Analysis (FEA), and improved upon testing failures
- Presented progress of project to board of advisors and sponsoring company

### **Robot Project**, Mechanical Design, group

<b>Fall 2019</b>
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- Designed a robot to: pick up rings, paper balls, cross a bridge, and dump collected items in 15" tall receptacle
- Created custom parts in SolidWorks (CAD), created drawings of the parts, and manufactured the parts by hand
- Tested individual and combined systems, improving upon failures

### **Atari Pong Project**, Digital Electronics, partnered

<b>Summer 2018</b>
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- Designed a circuit for Atari Pong, and coded the game in a digital hardware language (VHDL)
- Donated the game on a field-programmable gate array to the professor, per his request, to display to prospective students

## LEADERSHIP

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<b>Dartmouth College Football</b> (Division I), Hanover, NH	<b>August 2016-November 2019</b>
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- 2020 National Football Foundation College Football Hall of Fame Hampshire Honor Society Inductee
- Applied rigorous time management skills to succeed as a student and an athlete
- Took courses while spending 24+ hours per week practicing and training in season and 6 hours per week out of season
- 2019 co Ivy League Champions