BENJAMIN CULMER

Philadelphia, Pennsylvania • U.S. Citizen • 703-894-8048 • bculmer@seas.upenn.edu
https://benjamin-culmer.github.io

EDUCATION

University of Pennsylvania, Philadelphia, PA — **September 2022 – Present**
Master of Science in Engineering, Heat transfer, Fluid Mechanics, and Energy Concentration — GPA 3.88/4.0

Dartmouth College, Hanover, NH — **September 2016 – June 2020**
Bachelor of Engineering, Mechanical Concentration — Major GPA 3.35/4.0
Bachelor of Arts, Engineering Science — GPA 3.29/4.0

HIGHLIGHTED SKILLS

- Manufacturing: Lathe, Mill, Welding, Molding, and 3D Printing
- Computer-Aided Design Software: SolidWorks (CSWA Certified), xDesign, Product Data Management, COMSOL
- Programming languages: ANSI C, MATLAB, and VHDL
- Distributed Control System: DeltaV
- Foreign languages: German
- Teamwork: Division I Football at Dartmouth College (2019 Ivy Leage Co-Champions)

EXPERIENCE

WD Lab Grown Diamonds, Beltsville, MD — **Part-Time August 2022 – October 2023**
Mechanical Design Engineer (Research and Development) — **Full-Time June 2021 – August 2022**

- Advised executives as mechanical subject matter expert for all hardware
- Adapted custom diamond growth chambers to add state of the art technology (**SolidWorks (CAD)**)
- Created part drawings including Geometric Dimensioning & Tolerancing (**GD&T**) principles
- Negotiated with machine shops for custom fabrication
- Designed and executed experiments to qualify modifications to equipment and infrastructure
- Introduced **3D Printing** resulting in rapid prototyping and reduced manufacturing costs
- Troubleshot equipment malfunctions and implemented solutions to prevent future malfunctions
- Managed data migration from windows explorer to SolidWorks Product Data Management (**PDM**)
- Coordinated with vendors to perform **simulations** optimizing equipment and designed solutions to achieve simulated results
- Optimized the maintenance department
    - Updated tools
    - Corrected techniques
    - Implemented a novel task prioritization order
- Reviewed junior engineer's designs and technical drawings prior to manufacturing and testing
- Managed equipment installation remotely and reported updates to executives on installation status

Merck & Co. (AllSource PPS), Harrisonburg, VA — **July 2020 – May 2021**
Operations Engineer (Covid-19 vaccines and therapeutic projects)

- Researched, authored, and peer-reviewed standard operating procedures (SOPs) for factory equipment and facilities operation
- Conducted Personal Protective Equipment (PPE) hazard analysis for a manufacturing process
- Commissioned equipment on the factory floor as equipment subject matter expert
- Surveyed the facility ensuring Plumbing and Instrument Diagram (**P&ID**) accuracy for the equipment and facility
- Trained engineers and operators on equipment use
- Troubleshot and corrected issues in real time on the factory floor
- Executed published SOPs on the factory floor and made modifications to SOPs to optimize the manufacturing process

University of Pennsylvania School of Medicine, Philadelphia, PA — **June 2019 – August 2019**
Research Assistant for the Penn PET Explorer (First Full-Body PET Scanner) — **December 2018 – March 2019**

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

Dartmouth College, Thayer School of Engineering, Hanover, NH — **March 2019 – June 2019**
Research Assistant

- Explored alternative methods and materials to use in an artificial kidney system and preformed a cost-benefit analysis
- Created 3D models of kidney systems from CT scans using Mimics software
- Molded parts of the artificial kidney system and wrote a procedure for building future parts