

Matthew Q. Gothard

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Education

Vanderbilt University

Bachelor of Engineering: Mechanical Engineering

Cumulative GPA: 3.62, Major GPA: 3.86

May 2021

Nashville, TN

Professional Experience

Undergraduate Student Researcher

Vanderbilt Robotics and Autonomous Systems Lab

- Design a soft robotic system capable of physically emulating the weight of objects in virtual reality
- Designed a rotational haptic feedback system to be used in a virtual reality simulation for children with autism

September 2019 - Present

Nashville, TN

Mechanical Engineering Intern

NASA Marshall Space Flight Center, Advanced Concepts Office

- Created designs to advance the development of a Correlated Electromagnetic Levitation Actuator prototype
- Designed probe mounted on a 6-axis robotic arm capable of selectively magnetizing a neodymium plate
- Wrote technical reports detailing current research efforts and contributed to funding proposal report and video

June 2019 - July 2019

Huntsville, AL

Mechanical Engineering Intern

Formlabs Inc

- Designed, built, and coded a test jig for the factory calibration of the Form 3 SLA 3D printer
- Assembled and scripted a jig which streamlined the collection and visualization of data from hundreds of experimental trials
- Designed and assembled the z-axis for a plywood laminated sheet printer created for the 2019 Formlabs Hackathon

June 2019 - August 2019

Durham, NC

Senior Design Mentor

Vanderbilt University

- Coached a senior electrical engineer through incorporating microcontrollers into a physiological sensing prototype
- Generated reasonable and timely goals for the prototyping of the senior design project for two semesters

September 2018 - May 2019

Nashville, TN

Undergraduate Student Researcher

Vanderbilt Physiological Sensing Lab

- Designed and built a pressure sensitive shoe insole to predict fall risk using custom-etched flexible circuitry
- Programmed a custom graphical user interface of the insole array with a real-time, interpolated heatmap in MATLAB

January 2018 - May 2019

Nashville, TN

SyBBURE Searle Undergraduate Research Program Student Fellow

Vanderbilt University

- Engage in multidisciplinary team-based design projects, such as low-cost collapsible furniture for dorm rooms
- Generate biweekly presentations and provide feedback on peers' research projects

December 2017 - Present

Nashville, TN

Honors and Awards

Bruce and Bridgett Evans Scholarship

- Received the award due to interest and aptitude in entrepreneurship and recommendation by Vanderbilt faculty

August 2018

Summer Research Achievement Award

- Achieved the most summer research progress out of 50 undergraduate students in the SyBBURE Research Program

August 2018

Posters and Presentations

Vanderbilt ArtLab: Utilizing Art-Based Design

A Minimalist Design for Gait Analysis, Rehabilitation Assessment, and Fitness Tracking

Machine Design for Long-Exposure Artwork

Transform Students into Vigilante Innovators

Design of a Flexible Pressure-Sensing Insole for Gait Analysis

Benchmarking Quality Care in Critical Care Transport

Nashville Maker Faire 2019

Lipscomb Symposium 2019

ArtLab Exhibition 2019

VentureWell Open 2019

BMES Conference 2018

SCCM Congress 2017

Technical Skills

Programming: Python, C++, MATLAB, Simulink, LabVIEW, JavaScript

Design: Solidworks, PTC Creo, AutoCAD, Fusion 360, Autodesk Eagle, Adobe Illustrator