Matthew Q. Gothard

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Education

Vanderbilt University **May 2021**
Bachelor of Engineering: Mechanical Engineering *Nashville, TN*
Cumulative GPA: 3.62, Major GPA: 3.86

Professional Experience

Undergraduate Student Researcher **September 2019 - Present**
Vanderbilt Robotics and Autonomous Systems Lab *Nashville, TN*

- 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 in children with autism

Mechanical Engineering Intern **June 2019 - July 2019**
NASA Marshall Space Flight Center, Advanced Concepts Office *Huntsville, AL*

- 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

Mechanical Engineering Intern **June 2019 - July 2019**
Formlabs Inc *Durham, NC*

- Designed, built, and coded an improved jig for the factory calibration of over ten thousand Form 3 SLA 3D printers
- 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

Senior Design Mentor **September 2018 - May 2019**
Vanderbilt University *Nashville, TN*

- 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

Undergraduate Student Researcher **January 2018 - May 2019**
Vanderbilt Physiological Sensing Lab *Nashville, TN*

- 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

SyBBURE Searle Undergraduate Research Program Student Fellow **December 2017 - Present**
Vanderbilt University *Nashville, TN*

- 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

Honors and Awards

Bruce and Bridgett Evans Scholarship **August 2018**

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

Summer Research Achievement Award **August 2018**

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

Posters and Presentations

Vanderbilt ArtLab: Utilizing Art-Based Design **Nashville Maker Faire 2019**
A Minimalist Design for Gait Analysis, Rehabilitation Assessment, and Fitness Tracking **Lipscomb Symposium 2019**
Machine Design for Long-Exposure Artwork **ArtLab Exhibition 2019**
Transform Students into Vigilante Innovators **VentureWell Open 2019**
Design of a Flexible Pressure-Sensing Insole for Gait Analysis **BMES Conference 2018**
Benchmarking Quality Care in Critical Care Transport **SCCM Congress 2017**

Technical Skills

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

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