Thomas "Hunter" Blackburn

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Education:
Bachelor of Science in Mechanical Engineering - University of Central Florida *(Cum Laude 3.8 GPA)*
Master of Science in Biomedical Engineering – University of Central Florida *(4.0 GPA)*

Achievements: Dean's List Recipient Fall 2018, Dean's List Recipient Spring 2019, President's Honor Roll Recipient Fall 2019, Dean's List Recipient Fall 2020, Dean's List Recipient Spring 2021, Dean's List Recipient Fall 2021, President's Honor Roll Recipient Spring 2022, Florida Bright Futures Academic Scholar, Provost Scholarship Recipient

Licenses:
- Licensed Engineer Intern

Relevant Experience:

BPRE Clinical Immersion Program   June – July 2021
- Observed the technology and processes used in the biomedical field.
- Shadowed and interviewed doctors, prosthetists and orthotists, physical and speech therapists, and their patients to develop an intimate understanding of all facets of the rehabilitative delivery system.
- Developed the skills to identify, research and present needs statements based on feedback from end users in a clinical setting.
- Resulted in two additional senior design project options.

Smart Prosthetic with Integrated Cooling Elements (S.P.I.C.E.)   Fall 2021 – Spring 2022
- Led a team to design a novel prosthetic socket that maintains its own temperature.
- Collaborated with professional prosthetics to supplement given design goals.
- Applied various engineering principles and skills to design the product including principles of electrical engineering, heat transfer, CAD, and finite element analysis.
- Effectively managed a group of fellow students to ensure the team successfully designed and built a working prototype by the announced deadline.
- Submitted the design to represent UCF in the 2022 DEBUT competition.

The Effects of Anticipation of Physical Strain on Body   Fall 2022
- Tested to observe how anticipation of physical strain affects physiological body signals.
- Used an Empatica E4 and blood pressure cuff to collect raw photoplethysmography, heart rate, electrodermal activity, and blood pressure data.
- Analyzed the data to observe changes in blood volume pulse, heart rate, heart rate variability, electrodermal activity and blood pressure.

Observing How Varying Data Processing Parameters and Classification Techniques Affects Classification Accuracy   Spring 2023
- Wrote a MATLAB program to extract features from eleven EMG datasets and train a model to predict movement class based on the data.
- Used the program to observe how different filters, features, and classifiers affected the overall accuracy.
- Determined and reported the optimal algorithm for data processing.

Cummings Scientific, LLC, Tallahassee, FL   July 2023 – Present
- Mathematical and physical modeling of automotive accidents.
- Created graphical representations of incident objects involved in accidental injury.
- Machined and built test apparatuses for use in incident analysis.
- Biomedical and mechanical analysis of the human body during an accident

Relevant Coursework:
Mechanics of Biostructures 1 and 2   Fall 2021, Spring 2022
BME 5216C, BME 5217C
- Developed an understanding of the human body from an engineering mechanics perspective to gain a stronger grasp of what it means to design a machine that operates in or on the human body.
- Gained a deep understanding of the body's anatomy and physiology on a macro and cellular level.
- Developed an even greater passion for biomedical engineering by gaining a deeper understanding of the field.
- Gained experience in a cadaveric lab setting.

Introduction to the Engineering Profession   Fall 2018, Spring 2019
EGS 1006C
- Learned the basics of ethics in the engineering field.
- Developed the skills needed to work with others of varying attributes to be more effective as a team.
- Developed the skills necessary to create and manage a project timeline to maximize efficiency of a design project.

Bioinstrumentation   Fall 2022
BME 6500C
- □ Gained knowledge of the different physiological signals of the human body.
- □ Learned about the various sensors used to measure these signals.
- □ Discussed the pathologies and circumstances that would cause alternative measurement devices to be used over the conventional ones.

Methods in Neural-Machine Interfaces   Spring 2023
BME 6525
- □ Learned about and compared the different features used to represent underlying information in an EEG or EMG signal.
- □ Gained an understanding of different methods of dimensionality reduction and signal separation.
- □ Studied the classifiers, regression models, and neural networks used to predict movement class and kinematics from EMG data.

Advanced Biomechanics   Spring 2023
BME 6215
- □ Developed familiarity with numerous topics in the biomedical engineering field through reading and presenting recent studies.
- □ Developed strong oral presentation skills to present studies in a comprehensive and time effective manner.
- □ Gained understanding of lab kinematics and inverse dynamics and the programming skills necessary to work in the industry.

Software Experience
- □ Certified Solidworks Associate (CSWA)
- □ Certified Bosh CDR Technician
- □ Proficient with Microsoft Word, PowerPoint, and Excel
- □ Proficient in MATLAB
- □ Proficient with Fusion360
- □ Intermediate usage of Abaqus, LabVIEW and 3ds Max