Ross Brancati
PhD Candidate

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Skills

Programming Languages:
- python (advanced – 4+ years)
- matlab (advanced – 5+ years)
- R (advanced – 3+ years)
- SQL (beginner – 1+ years)
- HTML (beginner – 1+ years)
- Labview (intermediate – 2 years)

Data Science:
- machine learning (scikit-learn)
- deep learning (pytorch, tensorflow)
- signal processing
- feature extraction
- ml operations (MLflow)
- relational databases (pandas, SQL)
- statistics (ANOVA, regression)
- microsoft excel

Movement Science + Biomechanics:
- inertial measurement units (APDM)
- electromyography (Delsys, Biopac)
- heart rate monitors
- motion capture (Qualysis, Vicon)
- metabolic measurements (Parvo)
- force plates (AMTI)
- instrumented treadmills
- imaging (ultrasound, CT, MRI)
- human subjects research

Leadership + Management

2020 - Present: Vice President - American Society of Biomechanics Student Chapter

2020 – Present: Management of undergrad student in MOBL lab at UMass

2019 – 2020: Lab manager and undergrad student leader for ORB lab at UMichigan

2015 – 2019: President and captain of club ice hockey team at University of Connecticut

Projects + Coursework

My research projects, coursework, writing and presentation samples, and other projects related to my interests can be found on my portfolio site at rossbrancati.com.

Education

University of Massachusetts Amherst
Amherst, MA | August 2020 – Current   *GPA: 3.93/4.0*
Doctorate of Philosophy in Kinesiology
Concentrations: Biomechanics, Data Science, Wearables, Machine Learning

University of Massachusetts Amherst
Amherst, MA | August 2020 – Current   *GPA: 3.80/4.0*
Graduate Certificate in Statistical and Computational Data Science

University of Connecticut
Storrs, CT | August 2018 – May 2019   *GPA: 3.87/4.0*
Master of Science in Biomedical Engineering (*Concentration: Biomechanics*)

University of Connecticut
Storrs, CT | August 2014 – May 2018   *GPA: 3.4/4.0*
Bachelor of Science in Biomedical Engineering (*Concentration: Biomechanics*)

Experience

Musculoskeletal and Orthopedic Biomechanics Lab
University of Massachusetts Amherst | Amherst, MA | August 2020 – Current
Graduate Research Assistant | Director: Dr. Katherine Boyer

Dissertation: *Development of a computer aided diagnostic system for patellofemoral pain using wearable sensors and deep learning models*

Utilize data science approaches such as dimensionality reduction and machine learning to understand the complex relationship between pain and movement.

Analyze movement and biomechanics data to understand why humans adapt movement with aging, injury, pain, and pathologies.

UMass Men's Varsity Ice Hockey Team
University of Massachusetts Amherst | Amherst, MA | May 2022 – Current
Sports Science Intern | Supervisor: Brandon Wickett

Leverage Catapult's wearable technology to assess movement of elite athletes informing coaches and staff of player load, exertion, and injury risk.

Responsible for collecting, processing, and analyzing inertial data on ice sessions.

Orthopedic Research and Biomechanics Lab
University of Michigan | Ann Arbor, MI | May 2019 – August 2020
Laboratory Technician | Director: Dr. Lindsey Lepley

Examine biomechanical implications of anterior cruciate ligament tears in both human and non-invasive animal models using deep learning-based motion tracking.

Overhauled biomechanics laboratory from start to finish including installation of equipment and development/automation of data processing pipelines.

Sports Optimization and Rehabilitation Laboratory
University of Connecticut | December 2018 – May 2019
Graduate Research Assistant | PIs: Dr. Lindsey Lepley and Dr. Adam Lepley

Investigated anatomical and pathological outcomes after ACL reconstruction in humans via dynamic ultrasound imaging and kinematic/kinetic analyses.

Performed animal model work including CT scanning, marker less kinematic tracking, image analysis, and physiological measurements.

Karl Storz
Charlton, MA | May 2018 – August 2018
Continuous Improvement Intern - Manufacturing | Supervisor: Nicole Orell

Supported restructuring of manufacturing processes to improve production of hardware and software components for endoscopes using lean techniques.

Medtronic
North Haven, CT | May 2017 – August 2017
Research and Design Intern | Supervisor: Brian Creston

Contributed to designing, prototyping, and testing a novel medical device used for surgical applications such as occluding blood flow during bariatric surgery.