Ross Brancati

PhD Candidate

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Technical Skills

Programming Languages:

- Python (advanced – 5+ years)
- Matlab (advanced – 5+ years)
- R (advanced – 3+ years)
- SQL (beginner – 1+ years)
- HTML (beginner – 1+ years)
- Labview (intermediate – 2 years)

Data Science:

- Data cleaning and preprocessing
- Data analysis (Pandas, NumPy)
- Signal processing
- Feature extraction and engineering
- Dimensionality reduction (PCA)
- Hypothesis testing
- Regression modeling
- Data visualization (ggplot2, matplotlib, seaborn)
- Machine learning (scikit-learn)
- Deep learning (pytorch, tensorflow)
- ML operations (MLflow, W&B)
- Version control (Git)
- Microsoft Excel

Movement Science Research:

- Wearable technology (IMUs, EMG)
- Human subjects research
- Medical imaging (MRI, CT)
- Image processing
- Motion capture (Qualysis, V3D)
- Electromyography (Delsys, BioPac)
- Force Plates (AMTI, Bertec)
- Instrumented treadmills

General Skills

- Communication and presentation
- Teamwork and collaboration
- Adaptable and flexible
- Time management
- Leadership
- Problem-solving
- Interpersonal

Entrepreneurial Skills

- Customer discovery
- Business model canvas development
- Lean startup methodology
- Pitch deck creation and presentation
- Market and cost analysis

Education

University of Massachusetts Amherst
Amherst, MA | August 2020 – Current *GPA: 3.93/4.0*
Doctor of Philosophy in Kinesiology
Concentrations: Biomechanics, Data Science, Wearable Tech

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 (*Biomechanics*)

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

Research Experience

Musculoskeletal & Orthopedic Biomechanics Laboratory
University of Massachusetts Amherst | Amherst, MA | August 2020 - Present
Research Assistant | Director: Katherine Boyer, PhD

- Utilize data science approaches such as dimensionality reduction and machine learning to understand the relationship between pain and movement.
- Analyze movement patterns of those with pain and who are aging to work towards development of effective interventions in these populations.
- Developing a system to detect abnormal movement associated with pain in runners driven by wearable sensors and artificial intelligence models.

Center for Health and Human Performance
University of Massachusetts Amherst | Amherst, MA | May 2023 - Present
Data Science Intern | Director: Michael Busa, PhD

- Creating gait event detection algorithms for a novel smart wearable insole that records signals from pressure and movement sensors.
- Utilize techniques such as data windowing, data reduction, statistical models, and machine learning to develop such algorithms.
- Create high quality visualizations and presentations to translate findings to key stakeholders including startup founders.

UMass Men's Varsity Ice Hockey Team
University of Massachusetts Amherst | Amherst, MA | May 2022 – January 2023
Sports and Data Science Intern | Supervisor: Brandon Wickett, MS

- Leveraged wearable sensors (Catapult Sports) to assess movement of elite athletes informing coaches and staff of player load and exertion.
- Collected, processed, and analyzed IMU data through various statistical techniques such as regression models and hypothesis testing.

Orthopedic Research and Biomechanics Lab
University of Michigan | Ann Arbor, MI | May 2019 – August 2020
Research Associated 1 | Director: Lindsey Lepley, PhD

- Examined implications of ACL injuries in rodent and human models with various techniques such as biomechanical analysis and imaging.
- Overhauled human biomechanics lab from start to finish including installation and testing of equipment and development of data processing pipelines.

Entrepreneurial Pursuits

Gait Guard (Early stage/pre-revenue startup)
Founder, January 2023 – Present

- Leading a pre-revenue startup focusing on revolutionizing running related injury detection and treatment with wearable technology and AI.
- Conducting extensive customer discovery interviews to understand user pain points, needs, gaps, and adoption of new technology through ICorps.
- Developing a prototype with inertial measurement units and deep learning models to identify abnormal movement patterns.
- Working with key collaborators and partners in the startup space and wearable technology industry to secure initial seed funding.