

ZARYAN MASOOD

Research Engineer

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📍 Vancouver, Canada

🌐 Zaryan Masood

SUMMARY

Passionate wearable sensor researcher specializing in data-driven solutions for sport populations. Vast experience in injury and sport biomechanics with elite and sub-elite populations.

SKILLS

Languages: *Proficient:* MATLAB, R,
Familiar: SQL, Python, C ++

Technologies: Inertial Measurement Unit's (IMU's), Arduino, Electrophysiological sensors (EMG, ECG, EEG)

EDUCATION

- 9/2022 - Current **Ph.D. Bio/Mechanical Engineering - SimPL Laboratory** **University of British Columbia, Vancouver, CA**
Using instrumented mouthguards to understand the mechanisms of brain injury in NCAA and USports athletes
- 5/2020 - 8/2022 **MSc. Biomechanics - Kobsar Laboratory** **McMaster University, Hamilton, CA**
Implemented wearable sensors with machine learning for knee osteoarthritis monitoring
- 9/2016 - 4/2020 **BSc. Life Sciences - Physiological Sciences** **McMaster University, Hamilton, CA**
Undergraduate thesis at the Vascular Dynamics Laboratory studying exercise metabolism

PROJECTS

- 2024 **Multisport Comparison of Head Impact Biomechanics**
- Evaluated the efficacy of helmets for mitigating head kinematics and brain injury
 - Determined significantly higher peak angular accelerations (31%) in Football athletes and found limited evidence for dampening impulses for helmeted impacts
- 2023 **Creating a One-Class Support Vector Machine to Model Osteoarthritic Gait Patterns**
- Trained a support-vector machine to determine atypical gait patterns following a steroid injection
 - Model classified post-injection gait strides to be outliers with an accuracy of 94%
 - Results published in *Osteoarthritis and Cartilage* and presented at OARSI conference in Berlin, Germany
- 2022 **Validating an NBA Application using Wearable Sensors**
- Designed a data pipeline to compare basketball metrics from the NBA application to a gold standard biomechanical motion capture set-up
 - The NBA application displayed a 95% accuracy in detecting shots and 85% accuracy in shots made
- 2021 **Determining Primary Uses of Fuel During Submaximal Aerobic Exercise**
- Conducted exercise physiology testing to analyze fuel utilization with hormonal contraceptives
 - Carbohydrate fuel use was found to be statistically similar between naturally cycling and hormonal contraceptive users
 - Results published in *Journal of Applied Physiology* and presented at CSEP conference in Fredericton, NB

EXPERIENCE

- 4/2022 - 8/2022 **Research Scientist - Neuromuscular Biomechanics Laboratory** **Stanford University - Palo Alto, USA**
- Building models to understand the relationship between perceived pain and knee osteoarthritis treatment strategies
 - Pain levels decreased consistently by at least 13% following a corticosteroid knee injection
- MATLAB / Python
- 10/2021 - 4/2022 **Research Intern** **Pipeline Studios Ltd. - Hamilton, CA**
- Using OpenPose to calculate human postures such as release angle during a basketball shot
- R / Python
- 9/2020 - 6/2021 **Visiting Clinical Researcher** **Medway Hospital - London, UK**
- Spearheaded clinical trials for patients with heart failure
- Excel / R

AWARDS AND HONOURS

NSERC PGS-D (\$63,000), UBC 4-Year Fellowship (\$18,200), Michael Smith Foreign Study (\$10,000), NSERC CGS-M (\$17,500), NSERC CREATE (\$7,500), McMaster MIRA Scholarship (\$15,000), NIHR Grant on Resistance Exercise (\$250,000)

INTERESTS AND ACTIVITIES

Basketball, Hockey, Baseball, Running, Hiking, Cycling, Chess, Painting, Strategy Games