Shayan Riyaz

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STATEMENT

Research and Development Engineer with a robust background in Algorithm Engineering. Technical background includes algorithm design, data science, data analysis, Machine/Deep Learning (M/DL), Digital Signal Processing (DSP), embedded systems, software engineering, computer vision, and statistics. Proficient with experiment design, presentations, project management, report writing, and research planning.

EXPERIENCE

Stroke Dx, Senior Software R&D Engineer,   Los Angeles, CA, *2025 - Present*
- Lead Software Engineer responsible for algorithm research, development, and documentation.
- Researching computational pipeline development for automated stroke classification:
  - Transforming eddy current damping sensor based raw electromagnetic impedance data into 3D diagnostic visualizations for differentiating ischemic vs. hemorrhagic stroke subtypes.

Masimo Corporation, Algorithm Engineer II,   Irvine, CA, *2020 - 2025*
- Led a team of 3 engineers to deploy the PPG-based AFib detection project for a hospital wearable.
  - Optimized computation and memory overhead in **Python/C machine learning algorithms**.
  - Applied **model-based development** and design control for algorithms under IEC 62304 compliance.
  - **Collaborated with clinicians** to draft IRB (Institutional Review Board) protocols for **FDA validation**.
- Led the design of a **novel** low-power and memory **heart sound detector** for the next-gen Masimo Centroid
  - Achieved a **96% F1 score** using conditional probability, peak and cluster detection, and state machines.
  - Designed FIR filters in C and Python for gain and phase requirements.
- Achieved a **Root Mean Square error of ±2.9%** in detecting real-time activities such as steps, falls, and gait, utilizing accelerometer, gyroscope, and GPS data, in a four-engineer team, matching competitor accuracy.
  - Combined signal processing (IIR, FFT, cross-correlation) and Machine Learning (logistic regression and K-Neighbors) in C/C++, Python, and MATLAB for wearable activity detection.
- Achieved **98% PPV and 99% specificity** in sleep cycle classification for wrist wearables by incorporating neural networks in PyTorch with time-series and categorical data, deployed in C, JavaScript, Python, and SQL.

Human Performance and Robotics Laboratory, Research Assistant,   Long Beach, CA, *2019 - 2020*
- Successfully developed a **real-time simulation framework** integrating IMU data with biomechanical models to estimate vertical ground reaction forces across multiple dynamic tasks.
  - Lead data validation by **resampling, filtering, and synchronizing** force plate and IMU data.
- Developed a **Deep Learning glove controller** with CyberSens, integrating IMUs, Arduino, I2C, and vibration motors. Modeled in TensorFlow Python, firmware in C, deployed in ONNX in C#.

EDUCATION

California State University - Long Beach, **Bachelor of Science**, **EE** *2017 - 2019*
De Anza College, **Transfer**, **Electrical Engineering (EE)** *2015 - 2017*

SKILLS

Languages: C, C++, JavaScript, Matlab, Python**,** SQL
Frameworks/Libraries: Dash, Django, OpenCV, PyTorch, React, SciKitLearn, TensorFlow
Systems/Applications: Arduino, AWS S3, Elastic, Confluence, Docker, Linux, Simulink, Tableau
Methodologies: Agile, Six Sigma (White), GitLab, JIRA, CI/CD Practices

PUBLICATIONS

A. Recinos, J. Abella, **S. Riyaz**, E. Demircan "Real-Time Vertical Ground Reaction Force Estimation in a Unified Simulation Framework Using Inertial Measurement Unit Sensors" MDPI (2020).