Zhenyuan Zhang

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Education

PhD candidate in Human Movement Biomechanics Jul 2023 – Present
Research Institute for Sport and Exercise Science
Liverpool John Moores University, United Kingdom

Master of Science in Sport and Clinical Biomechanics Sep 2020 – Nov 2021
School of Sport and Exercise Science
Liverpool John Moores University, United Kingdom

Bachelor of Education in Human Movement Science Sep 2016 – Jun 2020
School of Exercise and Health Science
Chengdu Sport University, China

Skills

Languages: Python, Matlab, Git, Shell, LaTeX
Computer Simulations: OpenSim, Visual3D, Pyomeca, MyoSuite
Biomechanics Tools: Optical Motion Capture, Inertial Measurement Unit, Force Plates, EMG
High-Performance Computing: SLURM, AWS, Dask
Machine Learning: PyTorch, TensorFlow, Keras, Scikit-learn

Experience

Machine Learning and Biomechanics Researcher Jul 2023 – Present
SportScientia Ltd., Contracted
Remote

- Developed and validated deep learning neural network models to estimate ground reaction forces from instrumented insoles for various movement tasks.
- Validated instrumented insoles with sensor fusion algorithm for measuring spatiotemporal gait parameters against optical motion capture and force plates for athletic performance and load monitoring applications.
- Assisted in developing cloud computing pipelines with AWS to automate data processing and analysis for the instrumented insoles.

Biomechanics Laboratory Technician Sep 2025 – Present
Liverpool John Moores University, Contracted
United Kingdom

- Built up and fine-tuned 3 advanced biomechanics systems with the senior technician, provided professional training for staff and students. I am also responsible for managing them for both teaching and research activities.
- System1: 10 Qualysis Arqus motion capture cameras integrated with 8 Qualysis Miqus cameras for marker-less motion capture, 2 Kistler force plates, 16 Delsys Trigno EMGs.
- System2: 8 Qualysis Arqus motion capture cameras integrated with a Treadmetrix treadmill (AMTI force plate embedded), 16 Delsys Trigno EMGs and 8 Noraxon EMGs.
- System3: 14 Vicon Vero motion capture cameras integrated with 16 Vicon T-series cameras, 2 Kistler force plates, 8 Vicon Blue Trident IMUs and 16 Delsys Trigno EMGs.

Publications

Procter & Gamble VIA Certificate Program *Feb 2022*
Project Management and Personal Productivity

Awards & Achievements

High Honors Degree: Awarded to Bachelor alumni who have graduated with a GPA greater than or equal to 3.50 by Boğaziçi University. (Jul 2023)

TÜBİTAK 2247-C Intern Researcher Scholarship: Awarded to students who take part in research projects carried out by the Scientific and Technological Research Council of Turkey (TÜBİTAK). (Dec 2021 – Jun 2022)

KYK Outstanding Success Scholarship: Awarded to students who have been ranked in the top 100 on National University Admission Exam by Higher Education Credit and Hostels Institution (KYK). (Sep 2018 – Jun 2023)

Kocaeli Science High School Valedictorian Award: Graduated as the highest ranked student. (Jun 2018)

Projects

Filters and Fractals | *GitHub*

- A C project which implements a variety of image processing operations that manipulate the size, filter, brightness, contrast, saturation, and other properties of PPM images from scratch and recursive fractal generation functions to model popular fractals including Mandelbrot set, Julia set, Koch curve, Barnsley fern, and Sierpinski triangle.

Chess Bot | *GitHub*

- A C++ project in which you can play chess against an AI with a specified decision tree depth that uses alpha-beta pruning algorithm to predict the optimal move. Aside from basic moves, this mini chess engine also implements chess rules such as castling, en passant, fifty-move rule, threefold repetition, and pawn promotion.

DS&A Projects | *GitHub*

- Five Java projects that apply DS&A concepts such as discrete-event simulation using priority queues, Dijkstra's shortest path algorithm, Prim's algorithm to find the minimum spanning tree, Dinic's algorithm for maximum flow problems, and weighted job scheduling with dynamic programming to real-world problems.