

Hakanca Ozturk

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EDUCATION

Imperial College London <i>MSc in Applied Computational Science and Engineering</i>	09/2023-09/2024
<i>Modules:</i> Machine/Deep Learning, Inversion and Optimization, High-Performance Computing, Modelling	Expected: A
<i>Class Representative:</i> Facilitated monthly meetings with the department to discuss and resolve academic issues between students and faculty. Led the planning and execution of social events, demonstrating effective leadership, communication, and organizational abilities.	
Koc University <i>BSc in Mechanical Engineering</i>	2020-2023
1st place in department Graduated one year early Merit scholarship (\$20k annually)	GPA: 3.99/4.00
<i>Tutor/Asisstant:</i> Introduction to Engineering - Fluid Mechanics - Numerical Methods	
<i>Modules:</i> Propulsion Systems, Microsensors, Makerspace, Finite Element Method	
American Robert College <i>Highschool</i>	2015-2020
Volleyball team AP Calculus/Chemistry 1st place out of +1M students in the Highschool Entrance Exam	GPA: 85/100

PROJECTS

Tropical Storm Image Generation and Wind Speed Prediction <i>Imperial College London</i>	01/2024-02/2024
<ul style="list-style-type: none">Developed advanced convLSTM models using PyTorch for generating future images of tropical storms from 30 sequential datasets. Innovated a LeNet5-inspired model leveraging feature embeddings for predicting wind speeds with over 90% accuracy.As a team leader, orchestrated project workflows on GitHub, implementing CI/CD pipelines, following the guidelines. This ensured robust collaboration and seamless model development across an 8-member team, highlighting effective leadership.	
X-Ray Hand Image Generation and Classification <i>Imperial College London</i>	11/2023-12/2023
<ul style="list-style-type: none">Leveraged Variational Autoencoders (VAEs) and Generative Adversarial Networks (GANs) using PyTorch for X-Ray hand image generation. Trained on a dataset of 8000 images, this approach successfully synthesized high-quality, unique hand samples.Developed a ResNet-inspired neural network to accurately classify images as either VAE/GAN-generated, or real. Achieved a remarkable 96% accuracy by training on a dataset combining synthetic images from classroom projects with real images.	
Innovative Lunar Descent Vehicle Design with Reinforcement Learning	2022-2023
<ul style="list-style-type: none">Engineered and coded a lunar descent vehicle using MATLAB/Python, focusing on advanced trajectory optimization. Utilized ODE time-marching algorithms and integrated OpenAI Gym and PyTorch for state-of-the-art reinforcement learning techniques.	

PROFESSIONAL EXPERIENCE

Researcher <i>Pekkan Biofluid Mechanics Laboratory</i>	2023 – present
<ul style="list-style-type: none">Spearheaded complex bio-imaging analysis employing Fast Fourier Transform (FFT), Support Vector Regression (SVR), and Neural Networks to precisely predict collagen fiber orientations, significantly contributing to biomechanics research.Innovatively utilized Generative Models for groundbreaking biological data augmentation. Applied MATLAB/Python for intricate data interpretation and complex pattern analysis, enhancing the accuracy and depth of biomedical research.	
Production Engineer <i>SU-TAS Mining Corporation - Istanbul</i>	02/2023 - 08/2023
<ul style="list-style-type: none">Demonstrated strong project management skills through effective coordination of cross-functional teams, optimization of resource allocation, and adherence to safety. Oversaw all stages of quarrying operations, including explosion, mining, and crushing.Enhanced mining productivity and increased fragmentation efficiency by strategically engineering explosive placements in challenging quarry environments. This approach resulted in a significant 20% reduction in operational explosive costs.	
Research Assistant <i>Max Planck Institute for Intelligent Systems - Stuttgart</i>	06/2022 - 12/2022
<ul style="list-style-type: none">Conducted in-depth research on micro-scale robots for biomedical applications under the guidance of Prof. Metin Sitti, focusing on computational fluid mechanics. Used various regression models to generalize the physics behind micro-scale robots.Developed a novel method for enhancing COMSOL simulations on a cluster environment, employing Ubuntu for efficient scheduling and MATLAB for automated parameter adjustments, achieving a 200-fold increase in efficiency.	

SKILLS & ACHIEVEMENTS

Programming Languages Python, MATLAB, C++, Simulink, Arduino, \LaTeX
Frameworks PyTorch, scikit-learn, git, CI, parallel/cluster computing, Ubuntu, prototyping

PUBLICATIONS

Bozuyuk, U.*, **Ozturk, H.*** and Sitti, M. Microrobotic Locomotion in Blood Vessels: A Computational Study on the Performance of Surface Microrollers in the Cardiovascular System. Advanced Intelligent Systems, 2300099 (2023). DOI: 10.1002/aisy.202300099
Bozuyuk, U., **Ozturk, H.** & Sitti, M. The mismatch between experimental and computational fluid dynamics analyses for magnetic surface microrollers. Scientific Reports 13, 10196 (2023). DOI: 10.1038/s41598-023-37332-5
— Co-authoring two forthcoming papers with Max Planck Institute and two with Pekkan Biofluid Mechanics Laboratory.