

Hakancan Ozturk

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PROFESSIONAL EXPERIENCE

Software Development Engineer | *Amazon - London, UK* 01/2025 - Present

- Migrating Prime Video UI elements from **React** to **SolidJS** to enhance performance, leveraging **LLM-powered automation pipelines** for efficient component refactoring and codebase optimization.
- Pioneered the use of **LLM agents** (Python) connected via **MCP** to perform real-time analysis on over 10 million Prime Video operational metrics, enabling rapid detection of system regressions (Project won London-wide hackathon).

Founding Engineer | *Albus Technologies - London, UK* 05/2024 - 01/2025

- Engineered and optimized a scalable **Retrieval-Augmented Generation (RAG)** system with context-enriched vector search, boosting retrieval relevance by 30% and serving 100K+ customers.
- Developed scalable real-time **Document Semantic Extraction** pipelines and **LLM agents** using **AWS** (Lambda, S3, SQS, EC2), processing millions of PDF pages and over 50K minutes of audio.
- Established automated **CI/CD** workflows (Docker, GitHub Actions) to deploy **FastAPI** and **Lambda** endpoints, enabling dozens of concurrent file uploads with low-latency, robust production.

Computing Researcher | *Max Planck Institute - Stuttgart, Germany* 06/2022 - 12/2022

- Enhanced robotics dynamics prediction by deploying ML data pipelines (SVMs, curve fits) analyzing 10TB simulation data; optimized CFD simulations via novel HPC scheduling, achieving 200x speedup, enabling 3 publications.

EDUCATION

Imperial College London | *MSc in Applied Computational Science and Engineering* 09/2023-09/2024

Highest overall grade in class | Class representative Distinction (78.27%)

Modules: Machine/Deep Learning, Numerical Methods, Computational Maths, Optimization

Koc University | *BSc in Mechanical Engineering* 2020-2023

Ranked 1st in class | Graduated one year early | Merit scholarship (\$30k annually) GPA: 3.99/4.00

PROJECTS

MSc Dissertation: AI Surrogate Modeling for Turbulent Flow Simulations | *Imperial College London* 2024 - 2025

- Discovered a novel **Grid-Invariant AI architecture** (PyTorch) combining convolutional autoencoders and adversarial networks to simulate high-fidelity **turbulent flows**, achieving unprecedented **grid independence** and scalability.
- Conducted **2000+ GPU hours** of High-Performance Computing (HPC) for model optimization, enhancing **long-term stability** by 35% and prediction accuracy by 50%.
- Actively open-sourcing advancements (manuscripts in prep/review), with project development backed by **NVIDIA**.

Advanced Collagen Fiber Orientation Analysis | *Pekkan Biofluid Mechanics Laboratory* 2023 – 2024

- Directed advanced bio-imaging analysis (FFT, SVR, CNNs) achieving 95% accuracy in collagen orientation prediction, while also implementing novel Generative Diffusion Models (PyTorch) for 10x biological data augmentation.

SKILLS

Languages & Libraries: Python, Javascript, C++, MATLAB, PyTorch, scikit-learn, pandas, numpy, FastAPI, React

Cloud & DevOps: Docker, AWS, Github Actions, HPC, Parallel Computing, High-Performance Computing

ACHIEVEMENTS & AWARDS

- Y Combinator AI Startup School (San Francisco, 2025): Selected among top 2000 CS students/grads globally.
- Viridien & Imperial Hackathon Winner: Developed ML models for Carbon Capture & Seismic Data Analysis.
- High School Entrance Exam: Ranked 1st/1M; University Entrance Exam: Ranked 300th/2M (Turkey); IELTS: 8.0.

PUBLICATIONS

5 papers, 27+ citations

Bozuyuk, U.*, **Ozturk, H.***, & Sitti, M. (2023). Microrobotic locomotion in blood vessels: a computational study on the performance of surface microrollers in the cardiovascular system. *Advanced Intelligent Systems*, 5(9), 2300099.

Bozuyuk, U.*, **Ozturk, H.***, & Sitti, M. (2023). The mismatch between experimental and computational fluid dynamics analyses for magnetic surface microrollers. *Scientific Reports*, 13, 10196.

Saruhan, E. N., **Ozturk, H.**, Kul, D., Sevgin, B., Coban, M. N., & Pekkan, K. (2025). Learning-enhanced 3D fiber orientation mapping in thick cardiac tissues. *Biomedical Optics Express*, 16(8), 3315-3336.

Arslan, B., Bozuyuk, U., Görgülü, K., Yildiz, E., **Ozturk, H.**, Liotta, L., Heinemann, V., Algül, H., & Sitti, M. (2025). Anisotropic Surface Microrollers for Endovascular Navigation: A Computational Analysis with a Case Study in Hepatic Perfusion. *Advanced Theory and Simulations*, 2400387.

Yorulmaz, M., Bozuyuk, U., Park, M., Arslan, B., **Ozturk, H.**, Aghakhani, A., & Sitti, M. (2025). Locomotion Behavior of Magnetic Microrollers in Confined Tubular Geometries Containing Shear-Thinning Fluids. *MARSS 2025*, West Lafayette, USA.