Hakancan Ozturk

ho823@ic.ac.uk • +44 7436010077 • linkedin/hakancan • github/hkc01 • hakancanozturk.com

EDUCATION

Imperial College London | *MSc in Applied Computational Science and Engineering* 09/2023-09/2024
Class representative | Dissertation awarded 90.0% Distinction (78.27%)
Modules: Machine/Deep Learning, Numerical Methods & Modelling, Inversion and 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
Tutor/Asisstant: Introduction to Engineering - Fluid Mechanics - Numerical Methods
Modules: Propulsion Systems, Microsensors, Makerspace, Finite Element Method

PROFESSIONAL EXPERIENCE

Machine Learning Engineer | *Albus Technologies Limited - London, UK* Jun 2024 - Present
- Developed **Retrieval-Augmented Generation (RAG)** Framework for production, integrating retrieval methods like vector search and BM25 to optimize data retrieval for LLM models, improving output relevance and accuracy by 40%.
- Implemented automated CI/CD workflows using **Docker** and **GitHub Actions** to deploy a **FastAPI** application as an endpoint on Azure Web Apps, seamlessly integrating into larger system architecture for continuous model deployment.
- Trained **Low-Rank Adaptation (LoRA)** models for generative AI applications, fine-tuning diffusion models like SDXL and FLUX to boost generative quality by 20%, reducing training time by 10% through optimized hyperparameter tuning.

Production Engineer | *SU-TAS Mining Corporation - Istanbul, Turkey* 02/2023 - 08/2023
- Oversaw quarrying operations (explosion, mining, crushing) and led cross-functional teams, optimizing resource allocation and safety protocols, resulting in a 20% reduction in explosive costs by engineering efficient placements.

Guest Researcher | *Max Planck Institute for Intelligent Systems - Stuttgart, Germany* 06/2022 - 12/2022
- Conducted high-performance computational fluid dynamics (CFD) simulations for biomedical micro-robots, with a 200-fold efficiency increase by optimizing **COMSOL simulations** in a cluster environment.
- Authored two papers on microrobotic locomotion and simulation techniques, published in high-impact journals.
- Applied curve fits and support vector machines (SVMs) to process 10TB of data from micro-robot simulations, improving predictive accuracy in biomedical applications.

PROJECTS

Posgraduate Dissertation: AI Surrogate Modeling for Turbulent Flow Simulations | *Imperial College London* 2024
- Developed a novel **Grid-Invariant AI architecture** using convolutional autoencoders and adversarial networks to simulate high-fidelity **turbulent flows**, ensuring **grid independence** and scalability.
- Conducted **over 1000 GPU hours** on High-Performance Computing (HPC) for model fine-tuning, enhancing **long-term stability** and accuracy in turbulence predictions; research is leading to a forthcoming publication on **AI-driven surrogate modeling** in computational physics.

Advanced Collagen Fiber Orientation Analysis | *Pekkan Biofluid Mechanics Laboratory* 2022 – 2024
- 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 Neural Networks via **PyTorch** for groundbreaking biological **data augmentation**. Applied **MATLAB**/**Python** for intricate data interpretation and complex pattern analysis, enhancing the accuracy of biomedical research.

SKILLS & PUBLICATIONS

Languages & Libraries: Python, C++, MATLAB, PyTorch, scikit-learn, FastAPI, LaTeX
Cloud & DevOps: Docker, AWS, Github Actions, HPC, Parallel/Cluster Computing
Publications | *2 papers with >10 citations*
- Published 2 papers on microrobotic locomotion and computational fluid dynamics, in high-impact factor journals.
- Authoring forthcoming papers in collaboration with Max Planck Institute, BML(Koc), and ACMG(Imperial) groups.