Kostas Demiris

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Education

University College London (UCL) — London, England
Integrated Masters of Engineering in Computer Science — *Sep. 2023 – Exp. June 2027*
Grades: First Year Average of 84.4%, First Class in all modules

Reading School — Reading, England
Secondary School and Six Form College — *Sep. 2016 – July 2023*
Grades: A* in Maths, Further Maths and Physics, A in Computer Science

Experience

Undergraduate Research Intern - Neuroscience and AI — June 2024 – Aug. 2024
Physiological Computing and Artificial Intelligence Lab, UCL — *University College London, London, England*
- Won funding from the UCL Computer Science Department for my research proposal, the only first year student to do so in this year's iteration of the program.
- Proposed, developed and reported on several new Deep-Learning based approaches to Signal Processing and Denoising in large Physiological Datasets in the field of Brain-Computer Interfaces, particularly fNIRS systems.
- Investigated the viability and reliability of denoising auto-encoder based techniques for distinguishing neuron activation signals (HRFs) from confounding physiological noise, compared to traditional statistical analysis methodologies.

Head of Project Teams — July 2024 - Aug. 2025
UCL Artificial Intelligence Society — *University College London, London, England*
- Managing the UCL AI Society research division, Nexus Labs, which runs group research projects with students at both the Undergraduate and PhD level in the fields of Robotics, Generative AI, Neuroscience and Sustainable AI.
- Organising a series of Research Talks and Expositions from Postgraduate Students and Professors around their current research fields.

Research Experience — 6th June 2022 – 10th June 2022
Transport Systems Lab, Imperial College — *Imperial College London, London, England*
- Performed individual investigation of real-time Collision Detection in Traffic Systems using a basic Reinforcement Learning model, a Duckiebot traffic experiment and Pygame simulations.

Computer Science Prefect — Sep. 2022 – June 2023
Reading School — *Reading School, Reading, England*
- Co-Organized and ran first school-wide Game Development Hackathon.
- Ran Junior individual tutoring sessions for struggling Computer Science GCSE students
- Organized weekly programming tasks for Junior students interested in Computer Science

Projects

Auto-fNIRS-toolkit | *Python, Jupyter Notebook, PyTorch, MatPlotLib* — Nov. 2023 – Jan. 2024
- Developed an Open-Source toolkit for fNIRS data analysis, processing and generation, for use in further UCLIC research
- Provides signal visualisations for manual analysis, using MatPlotLib, in both time and time-frequency representations
- Uses STFTs and Wavelet Transforms to extract time-frequency component data from wave signals.
- Automated data processing is implemented using different variations of denoising Auto-Encoders
- Synthetic data generation for training augmentation is provided using an Auto-Regressive Model

Patient Database Web App | *Java, MVC Design Pattern, JSP, HTML* — June 2024 – Aug. 2024
- A Web-App to access, search and update a database of patient records, as coursework for a programming module.
- Uses the Model-View-Controller design principle, with JSPs and HTML to create the front End
- Developed a Query System to sort and retrieve specific records from stored JSON and CSV data.

SightSign | *Python* — Dec. 2023 – Jan. 2024
- Developed an image compression and hashing framework for Image Authentication and Texture analysis
- Developed Perceptual hashing algorithms using a self-created Fourier transform and matrix library

Gaze-Tracking Mouse | *Python, Apple CoreGraphics framework* — Sep. 2023 – Apr. 2023
- A program designed to let Quadriplegic (Full Bodily Paralysis) patients move a mouse with their gaze direction, developed as my Computer Science A-level NEA
- Uses a modified Adaptive Boosting algorithm for facial detection, while also providing tools for initially training the model.
- Uses Apple's CoreGraphics framework to control the keyboard and provide smooth mouse movement

Professional Skills

Spoken Languages: Fluent in English, Greek, Catalan. Conversational Proficiency in Spanish. Right to Work in UK & EU.
Programming Languages: Python, C, Java, Haskell
Developer Tools: Git, VS Code, Visual Studio, PyCharm, IntelliJ
Certificates: "Teen Programming in Python" Summer Camp, Firetech, Imperial College London *[Aug. 2020]*, "Matrix Algebra for Engineers", HKUST, Coursera *[Sep. 2024]*, "Differential Equations for Engineers", HKUST, Coursera *[Oct. 2024]*