Marina Efstratiou

✉ marina.efstratiou@gmail.com • 🌐 marinaefstratiou.com

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Bioengineer with nine years of experience in engineering and biology techniques. Diverse academic background and conceptual skills in areas ranging from fluid mechanics to cell biology. Currently working on the development of a bio-microfluidic platform for single cell analysis. Experienced in designing of experiments (DoE), data analysis and interpretation.

Areas of Interest include: Fluid Mechanics (Bio-fluids) and Droplet Dynamics, Disease Diagnosis and Treatment, Data Science and Machine Learning (Computer Vision), Interfacial Phenomena

Software: Python (Keras/Tensorflow, scikit-learn, Numpy, Pandas, Matplotlib), ImageJ (Fiji), OriginLab, Microsoft Office, Matlab, SOLIDWORKS, AutoCAD

Languages: Greek (native), English (Proficient – IELTS 8.0), Spanish (learning)

Experience

Senior Scientist   **Cambridge, UK**
Lightcast Discovery Ltd   *Jan 2024 – Present*

Leading the testing and optimization of a bio-microfluidic platform, proposing modifications.
Demonstrating expertise in technical troubleshooting, system maintenance, and performance optimization.
Liasing with the software development team on hardware/software platform improvements including signal detection.
Collaborating with the biology team on workflow enhancements.
Data Science (20% Time Allocation): Applying data science techniques (Numpy, Pandas, Matplotlib) using Python to gain insight into the data generated by the platform. Deciding data analysis priorities and coordinating with the data science team to enhance readouts and reduce turnaround times.

Applications Scientist   **Cambridge, UK**
Lightcast Discovery Ltd   *July 2022 – Dec 2023*

Worked on the development of a bio-microfluidic platform, performing technical troubleshooting of fluidic and optical components, system optimisation and maintenance. Designed assays in conjunction with the biology team and executed on-platform experiments. Worked as a part-time member in the Data Science team, analysing results in Python using data science techniques. Experienced in (Bio)Microfluidics, Optics and Image Analysis Techniques.

Research Associate in Soft Matter Biophysics   **Manchester, UK**
Division of Pharmacy and Optometry, The University of Manchester   *Jan 2022 – June 2022*

Worked with Dr Richard Campbell. Examined the interactions of nanoparticles with model lung surfactant systems using interfacial characterization techniques. Ensured timely completion of milestones within budget. Actively collaborated with the research team and prepared progress reports. **Experienced in techniques** such as: Langmuir trough technique, Ellipsometry, Neutron Reflectometry, Brewster Angle Microscopy.

Education

Ph.D Chemical Engineering   **Edinburgh, UK**
Institute of Multiscale Thermofluids, University of Edinburgh   *Sept 2017 – Oct 2021*

Thesis: *"A Study on the Evaporation and Desiccation Patterns of Bio-drops for the Development of a Disease Diagnostic Tool"*
Worked with Dr John Christy and Professor Khellil Sefiane.
Investigated evaporative behavior and desiccation patterns of bio-droplets (saline, protein, urea, FBS) on surfaces to develop a novel disease diagnostic tool. Established links between operating conditions, droplet composition, and final desiccation patterns. Developed physical models and performed image analysis to explain and quantify observed phenomena.
Experienced in techniques such as: Drop Shape Analysis, Microscopy (Optical, Polarised Light Microscopy, Laser Scanning Confocal Microscopy, Scanning Electron Microscopy – EDX/EDS), Micro-PIV (Particle Image Velocimetry), Infrared Thermography, Image Processing and Analysis (computer vision techniques)

MSc Biomedical Engineering   **Limassol, Cyprus**
Cyprus University of Technology, 8.6/10   *Sept 2015 – June 2017*

Dissertation: *"Characterization of mesenchymal stem cell-derived micro-particles for the targeted treatment of cancer tumours"*

BSc Mechanical Engineering and Material Science   **Limassol, Cyprus**
Cyprus University of Technology, 7.35/10   *Sept 2011 – June 2015*

Dissertation: *"Study of Electroencephalography and Magnetoencephalography Problems."*

Certificates

- *"Convolutional Neural Networks"*, DeepLearning.AI, Coursera, Stanford CPD, Issued May 2024
- *"Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization"*, DeepLearning.AI, Coursera, Stanford CPD, Issued Apr 2024
- *"Neural Networks and Deep Learning"*, DeepLearning.AI, Coursera, Stanford CPD, Issued Mar 2024
- *"Advanced Learning Algorithms"*, DeepLearning.AI, Coursera, Stanford CPD, Issued Feb 2024
- *"Machine Learning"*, DeepLearning.AI, Coursera, Stanford CPD, Issued Feb 2024
- *"Supervised Machine Learning: Regression and Classification"*, DeepLearning.AI, Coursera, Stanford CPD, Issued Jan 2024
- *"Python for Data Science and Machine Learning Bootcamp"*, Udemy, Issued Sept 2023
- *"Complete Python Developer in 2022: Zero to Mastery"*, Udemy, Issued Oct 2022

Selected Publications

- Efstratiou, A., **Efstratiou, M.**, Yudhoatmojo, S., Blackburn, J., De Cristofaro, E. (2024). " Here's Your Evidence": False Consensus in Public Twitter Discussions of COVID-19 Science, arXiv preprint arXiv:2401.13248 *(Conditionally accepted with minor revisions at the 27th ACM Conference on Computer-Supported Cooperative Work and Social Computing)*
- **Efstratiou, M.**, Christy, J., Bonn, D., & Sefiane, K. (2022). Transition from Dendritic to Cell-like Crystalline Structures in Drying Droplets of Foetal Bovine Serum Under the Influence of Temperature. Langmuir 38 (14), 4321-4331
- **Efstratiou, M.**., Christy, J., Bonn, D., & Sefiane, K. (2021). The Effect of Substrate Temperature on the Evaporative Behaviour and Desiccation Patterns of Foetal Bovine Serum Drops. Colloids and Interfaces, 5(4), 43
- **Efstratiou, M.**, Christy, J., & Sefiane, K. (2020). Crystallization-driven flows within evaporating aqueous saline droplets. Langmuir, 36(18), 4995-5002.

Please find a full list of Publications at **Google Scholar**

Side projects

- Collaborated with Software Engineers and Haematologists in a stealth mode startup (AimaAI) to infer diagnoses from images of blood smears using both traditional computer vision and machine learning techniques.
- Collaborated with researchers from the School of Informatics at the University of Edinburgh to acquire contact angle, volume, and radius measurements from images and videos of drying droplets of biological fluids deposited on surfaces using computer vision techniques.
- For other projects see my **GitHub profile**

Grants and Personal Development

Research Staff Dissemination and Collaboration Fund
University of Manchester   *June 2022*

Applied for and secured a funding of 5,000 GBP for Multidisciplinary Research between groups in different departments within the University of Manchester. The application was submitted in collaboration with Dr Finn Box from the School of Physics and Astronomy for the investigation of droplet dynamics in microfluidic channels.

School Postgraduate Experience Committee (SPEC) Representative
University of Edinburgh   *Sept 2018 – Sept 2019*

Represented the PhD students of the institute in a committee composed of staff and postgraduate students from each research institute of the School of Engineering. Raised postgraduate student issues to improve the experience of PhD students. Organised events such as the School Research Conference, Open days and training sessions.

Newton Fund (Grant number 337066)
University of Edinburgh   *Sept 2017*

Secured a full scholarship for the completion of a Ph.D by the School of Engineering,University of Edinburgh