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Amaya **Gallagher-Syed**

Who am I?

I'm a computational biologist with a focus on deep learning methods applied to healthcare data, such as medical images, "-omics" data and medical health records. I'm passionate about the role of AI in the future of medicine, and about contributing my skills to improving diagnostics and treatments for all patients.

Keywords

Multimodal clinical data · Omics · High dimensional data · Immunology · Deep Learning · GNNs · Multiple Instance Learning

Skills

Python
- ◇ PyTorch
- ◇ PyTorch Geometric
- ◇ DGL
- ◇ HuggingFace

Computer Vision
- ◇ Histopathology

Natural Language Processing
- ◇ LLMs
- ◇ Electronic Health Records

Version control: Git, GitHub

Cloud: SHH for remote HPC connection, distributed computing

Biology
- ◇ Transcriptomics
- ◇ Immunology

Languages: English (native), French (native), Spanish (fluent)

Proactive, driven, creative and a team player

Awards

- Best poster award WHRI PhD Symposium 2024

Experience

Wellcome Trust funded PhD student - Health Data in Practice
Queen Mary University of London **2021.10–2025.10**

◇ Thesis topic: *Graph Neural Network approaches for clinical trial data of Immune Mediated Inflammatory Diseases.*

My research focuses on developing Graph Neural Network pipelines adapted to integrating diverse forms of biomedical data, such as imaging, "multi-omics" and clinical patient records, seeking to leverage their properties to identify patient sub-groups.

◇ Supervisors: Prof. Michael R. Barnes · Bioinformatician | Prof. Myles J. Lewis · Rheumatologist | Prof. Gregory Slabaugh · Computer Scientist

Teaching Assistant
Queen Mary University of London **2021.11–pres.**

◇ Statistics for Artificial Intelligence and Data Science
◇ Post Genomics Bioinformatics

Education

Wellcome Trust funded MRes - Health Data in Practice
Queen Mary University of London **2020–2021**

◇ Thesis title: *Deep learning image classification of early Rheumatoid Arthritis synovial histology by pathotypes.*
◇ Modules: Intro to and Advanced Natural Language Processing, Health Data in Practice.
◇ Grade: 1st

MSc in Mathematical Sciences - Data Analytics Major
Queen Mary University of London **2019–2020**

◇ Thesis title: *Applying machine learning techniques to the gene expression data of early Rheumatoid Arthritis patients to distinguish between treatment responders and non-responders.*
◇ Modules: Intro to and Advanced Machine Learning, Scientific Computing, Graphs and Networks, Times Series.
◇ Grade: 1st

Licentiate in Biological Sciences - Computational Biology Major
Universidad de Buenos Aires **2012–2019**

◇ Selected projects:

- *Stochastic temporal evolution model of a plant-pollinator interaction network, based on preferential attachment with fitness parameters.*
- *Matrix projection model of a wild board population under hunting pressure in PN El Palmar.*

◇ Modules: 7 year full-time degree covering general biology, ecology, chemistry, physics, mathematics, statistics and programming.
◇ Grade: 8.3/10

Publications

◇ **Amaya Gallagher-Syed**, Luca Rossi, Felice Rivellesse, Costantino Pitzalis, Myles J. Lewis, Michael Barnes, and Gregory Slabaugh. **Multi-stain self-attention Graph Multiple Instance Learning pipeline for histopathology Whole Slide Images**, 34^{th} *British Machine Vision Conference* (2023).

◇ **Amaya Gallagher-Syed**, Abbas Khan, Felice Rivellese, Costantino Pitzalis, Myles J. Lewis, Gregory Slabaugh, Michael R. Barnes. **Automated segmentation of rheumatoid arthritis immunohistochemistry stained synovial tissue**, 27^{th} *Conference on Medical Image Understanding and Analysis* (2023).

◇ L Basseto, J Duquesne, V Bouget, M Barnes, E Pontarini, **A Gallagher-Syed**, M Bombardieri, B Fisher, S Nayar, C Adam, T Lazure, X Mariette, S Bitoun. OP0232. **Deep Learning accurately predicts Focus Score and diagnosis of primary Sjogren Syndrome using labial salivary gland biopsies**, *Annals of the Rheumatic Diseases*, 82:152-153 (2023).

◇ **Amaya Gallagher-Syed**, Elena Pontarini, Michele Bombardieri, Myles J. Lewis, Gregory Slabaugh, Michael R. Barnes. **Histopathological Assessment of Sjogren's Disease with HistoMIL**, *IEEE International Symposium on Biomedical Imaging*, Conference Abstract (2023).