



Personal Statement

A PhD candidate proficient in developing methods with medical applications. Extensive experience working in inter-disciplinary teams to deliver novel neural networks applied to gastric cancer treatment. Looking for the opportunity to apply my scientific research skills to solve new real-world problems and continue contributing to the field.



Relevant Experience

PhD - Medical Diagnosis and Care (Jan 2019 – Present)

University of Leeds

- Developed new graph neural networks (GNNs) and a novel framework that uses spatial information.
- Applying GNNs to digital pathology slides to identify stomach cancer patients who benefit from adjuvant chemotherapy following surgery.
- Used GNNs to perform tissue segmentation and survival prediction.
- Carried out statistical analysis and survival analysis in R, SPSS and Python.
- Engagement: Lead and managed the outreach group.
- Teaching: Tutoring machine learning to masters students.

Theia AI (Jan 2022 – Present)

Co-founder – Treatment decision support tool for MS

- Completed a 6-month program for business management (Conception X).
- Raised £100,000 in venture capital investment.
- Obtained a clinical dataset through collaboration with Neurologists.
- Graduated the Health Innovation Yorkshire and Humber, Propel accelerator.

SkillsGap (Feb 2022 – Feb 2023)

Consultant, Panellist and Instructor

- Produced and delivered workshops to 16–18-year-olds, teaching them about applications of AI to Physics, Medicine and Climatology.

Astrophysics Research Institute (June 2018 – Sept 2018)

Research Intern

- Developed a pipeline to extract, clean and perform statistical analyses on stellar data from telescope images.
- Demonstrated that a set of stars are reliable sources for the calibration of specialist equipment.



Skills

- AI development in Python
- Survival Analysis and longitudinal modelling in Python, R and SPSS.
- Cloud Computing (AWS, HPC).
- Machine Learning.
- Natural Language Processing.
- SQL
- Clinical collaboration and presenting.



Education

PhD in AI for Medical Intervention

University of Leeds (Submitted)

Masters in Computer Science

(Distinction)

University of Leeds (2021)

Masters in Astrophysics (1st Class)

Sir Isaac Roberts Award (Top of Class)

University of Liverpool (2019)



Publications

Using Hierarchically Connected Supernodes to Increase the Receptive Field of Graph Neural Networks in Cell Graphs. J Sims et al. (Under Review)
Submitted to Medical Image Analysis Journal in August 2024.

Using Hierarchically Connected Nodes and Multiple GNN Message Passing Steps to Increase the Contextual Information in Cell-Graph Classification. J Sims et al. (2022). Lecture Notes in Computer Science, pages 99-107, Vol 13754 LNCS.

The Potential Clinical Utility of Ecological Spatial Statistics in Patients with Stage II/III Gastric Cancer. J Sims et al. (2022), (Poster). Virtual 4th Joint Winter Meeting, J. Pathol., 256: S1-S19

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References

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