SHUO ZHOU

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RESEARCH INTEREST

Interpretable Machine Learning, Medical Data Analysis

PRESENT APPOINTMENT

FRESENT AFFOINTMENT	
 Lecturer in Machine Learning, School of Computer Science, University of Sheffield. Deputy Head of Al Research Engineering, Centre for Machine Intelligence, University of Sheffield. 	Since 02.2025 Since 01.2023
PRIOR ACADEMIC ROLES	
 Academic Fellow in Machine Learning, University of Sheffield Research Assistant in Machine Learning for Medical Image Analysis, University of Sheffield Research Software Engineer, University of Sheffield 	07.2022 -01.2025 09.2021 -06.2022 04.2020-06.2021
EDUCATION	
 PhD, Computer Science, University of Sheffield, UK Visiting Researcher, Beijing Normal University, China. MSc (Completion with Distinction), Advanced Computer Science, University of Sheffield, UK MA, New Media and Society, University of Leicester, UK BSc, Information Technology and Education, Jiangnan University, China 	03.2018-02.2022 12.2020 -01.2021 09.2016-01.2018 10.2012-01.2014 09.2008-06.2012
FUNDED PROJECTS	
 A Novel Artificial Intelligence Powered Neuroimaging Biomarker for Chronic Pain. GBP 431,000. Funded by Engineering and Physical Sciences Research Council (EPSRC). Co-Investigator. 	10.2023-03.2025
 An Introduction to Transparent Machine Learning. GBP 24,919. Part of the "Online Learning Courses in Responsible AI" supported by the Alan Turing Institute. Post-Doctoral Enrichment Awards. GBP 2000. 	09.2022-12.2022 Co-Investigator. 07.2022-01.2023
 Funded by the Alan Turing Institute. Principal investigator. Sheffield Turing Network Funding. GBP 24,964. Funded by the Alan Turing Institute. Co-Investigator. 	02.2022-09.2022
PUBLICATIONS	

Journal Papers

- 1. **Zhou S.,** Luo J., Jiang Y., Wang H., Lu H., and Gong G. (2025) "Group-specific discriminant analysis enhances detection of sex differences in brain functional network lateralization", *GigaScience*.
- 2. Liu, X., **Zhou, S.,** Lei, T., Jiang, P., Chen, Z., and Lu, H. (2023). "First-Person Video Domain Adaptation with Multi-Scene Cross-Site Datasets and Attention-Based Methods", *IEEE Transactions on Circuits and Systems for Video Technology*.
- 3. M. Kunda, **S. Zhou**, G. Gong, and H. Lu. (2022). "Improving Multi-Site Autism Classification via Site-Dependence Minimization and Second-Order Functional Connectivity", *IEEE Transactions on Medical Imaging*.
- 4. S. Alabed, J. Uthoff, **S. Zhou**, P. Garg, K. Dwivedi, F. Alandejani, R. Gosling, L. Schobs, M. Brook, Y. Shahin, ..., H. Lu, and A. Swift. (2022). "Machine learning cardiac-MRI features predict mortality in newly diagnosed pulmonary arterial hypertension", *European Heart Journal Digital Health*, 3(2), 265–275.
- 5. L. Song, **S. Zhou**, and H. Lu. (2022). "Direct ICA on Data Tensor via Random Matrix Modeling", *Signal Processing*, 108508.
- M. D. Schirmer, A. Venkataraman, I. Rekik, M. Kim, S. H. Mostofsky, M. B. Nebel, K. Rosch, K. Seymour, D. Crocetti, H. Irzan, M. Hütel, S. Ourselin, N. Marlow, A. Melbourne, E. Levchenko, S. Zhou, M. Kunda, H. Lu, et al. (2021). "Neuropsychiatric disease classification using functional connectomics-results of the connectomics in neuroimaging transfer learning challenge", *Medical Image Analysis*, 70, 101972.
- 7. A. J. Swift, H. Lu, J. Uthoff, P. Garg, M. Cogliano, J. Taylor, P. Metherall, **S. Zhou**, C. S. Johns, S. Alabed, et al. (2021). "A machine learning cardiac magnetic resonance approach to extract disease features and automate pulmonary arterial hypertension diagnosis", *European Heart Journal-Cardiovascular Imaging*, 22(2), 236–245.

Conference Papers

1. Fan, W., Rizky, L. M., Zhang, J., Chen, C., Lu, H., Teh, K., Selvarajah, D., and **Zhou, S**. (2025) "Foundation-Model-Boosted Multimodal Learning for fMRI-based Neuropathic Pain Drug Response Prediction" in *Proc. of the 28th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*.

- 2. Suvon, M.N., Tripathi, P.C., Fan, W., **Zhou, S.**, Liu, X., Alabed, S., Osmani, V., Swift, A.J., Chen, C. and Lu, H. (2024). "Multimodal Variational Autoencoder for Low-cost Cardiac Hemodynamics Instability Detection", in *Proc. of the 27th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI).*
- 3. Tripathi, P. C., Suvon, M. N., Schobs, L., **Zhou, S.**, Alabed, S., Swift, A. J., and Lu, H. (2023). "Tensor-based Multimodal Learning for Prediction of Pulmonary Arterial Wedge Pressure from Cardiac MRI", in *Proc. of the 26th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*.
- 4. H. Lu, X. Liu, **S. Zhou**, R. Turner, P. Bai, R. Koot, M. Chasmai, L. Schobs, and H. Xu. (2022). "PyKale: Knowledge-Aware Machine Learning from Multiple Sources in Python", in *Proc. of the 31st ACM International Conference on Information and Knowledge Management (CIKM)*.
- 5. L. Schobs, **S. Zhou**, M. Cogliano, A. Swift, and H. Lu. (2021). "Confidence-quantifying landmark localisation forcardiac MRI", in *Proc. of the IEEE International Symposium on Biomedical Imaging*, 985-988. IEEE.
- 6. **S. Zhou**, W. Li, C. Cox, and H. Lu. (2020). "Side information dependence as a regularizer for analyzing human brain conditions across cognitive experiments", in *Proc. of the AAAI Conf. on Artificial Intelligence*, 34, 6957–6964.
- 7. **S. Zhou**, C. R. Cox, and H. Lu. (2019). "Improving whole-brain neural decoding of fMRI with domain adaptation", in *International Workshop on Machine Learning in Medical Imaging*, 265–273. Springer.
- 8. W. Li, J. Lou, **S. Zhou**, and H. Lu. (2019). "Sturm: Sparse tubal-regularized multilinear regression for fMRI", in *International Workshop on Machine Learning in Medical Imaging*, 256–264. Springer.
- 9. L. Schobs, **S. Zhou**, M. Cogliano, A. Swift, and H. Lu. (2019). "A Biased Sampling Network to Localise Landmarks for Automated Disease Diagnosis" in *Medical Imaging Meets NeurIPS* (a workshop in NeurIPS 19).

TEACHING

• COM6012 Scalable Machine Learning, University of Sheffield 2022/23-2024/25 (Module lead since 2023/24)

2022/23

2022

- COM6911 Data Analytics Team Project, University of Sheffield
- An Introduction to Transparent Machine Learning, the Alan Turing Institute

COLLABORATORS (IN ALPHABETICAL ORDER BY SURNAME FOR EACH CATEGORY)

External:

- Christopher R. Cox. Assistant Professor of Psychology, Department of Psychology, Louisiana State University.
- Gaolang Gong. Professor at the State Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University.
- Venet Osmani. Professor of Clinical AI and Machine Learning, Queen Mary University of London.
- Robert Turner. Software engineer, University of Oxford.

Internal at the University of Sheffield:

- Samer Alabed. Senior Clinical Research Fellow at Clinical Medicine, School of Medicine and Population Health.
- Chen Chen. Lecturer in Computer Vision at School of Computer Science.
- Haiping Lu. Professor of Machine Learning at School of Computer Science.
- Dinesh Selvarajah. Senior Clinical Lecturer at School of Medicine and Population Health.
- Andrew Swift. Professor of Cardiothoracic Radiology at Clinical Medicine, School of Medicine and Population Health.
- Kevin Teh. Postdoctoral Researcher in Neuroimaging at School of Medicine and Population Health.

ACADEMIC SERVICES

- Journal reviewer for IEEE Transactions on Neural Networks and Learning Systems (TNNLS), IEEE Transactions on Medical Imaging (TMI), IEEE Transactions on Cognitive and Developmental Systems (TCDS), IEEE Transactions on Neural Systems & Rehabilitation Engineering (TNSRE), and Cerebral Cortex.
- Conference program committee member of the International Joint Conference on Artificial Intelligence (IJCAI 2022 2024), and the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2024 and 2025).

OPEN DATA AND SOFTWARE

- Supporting data for "Group-specific discriminant analysis enhances detection of sex differences in brain functional network lateralization" GigaScience Database. https://doi.org/10.5524/102700.
- Co-creator, core contributor, and maintainer of PyKale, a library in the PyTorch ecosystem.
- Processed intrahemispheric brain connectivity of Human Connectome Project (HCP) and Brain Genomics Superstruct Project (GSP) datasets.
- Processed and released cardiac MRI dataset ShefPAH-179, which were initially acquired by the Department of Infection, Immunity and Cardiovascular Disease, University of Sheffield.