Yuxuan Shu

PhD Candidate · Computer Science, Centre for Artificial Intelligence

University College London, London, WC1E 6BT, United Kingdom

yuxuan.shu.22@ucl.ac.uk | claudiashu.github.io | ClaudiaShu | yuxuan-shu-015137198

Education

University College London *London, United Kingdom*

PhD in Computer Science, Centre for Artificial Intelligence *Dec. 2022 – present*

- Supervisor: Dr. Vasileios Lampos
- Published 2 peer-reviewed papers at top-tier venues (AAAI oral, TMLR) and 2 preprints
- Developed novel architectures for time series models including deformable attention mechanisms and spectral operators

Imperial College London *London, United Kingdom*

Master of Research, Medical Robotics and Image Guided Intervention *Oct. 2021 – Oct. 2022*

- Supervisor: Dr. Benny Lo
- Graduated with distinction
- Published 1 peer-reviewed paper at a top-tier venue (BMVC)

Wuhan University *Wuhan, China*

Bachelor, Remote Sensing Science and Technology *Sept. 2017 – Jun. 2021*

- Undergrad research advisor: Dr. Fan Zhang

Internships

Nokia Bell Labs *Cambridge, UK*

Research Intern *Jun. – Aug. 2025*

- Supervised by Dr. Mohammad Malekzadeh and Dr. Peter Charlton
- 1 preprint paper; 1 patent filed; code open-sourced

Publications

Published

Yuxuan Shu and Vasileios Lampos Sonnet: Spectral Operator Neural Network for Multivariable Time Series Forecasting, **Association for the Advancement of Artificial Intelligence (AAAI)**, 2026 **(Oral Presentation)** · Paper | Code | Dataset

Yuxuan Shu and Vasileios Lampos DeformTime: Capturing Variable Dependencies with Deformable Attention for Time Series Forecasting, **Transactions on Machine Learning Research (TMLR)**, 2025 · Paper | Code | Project

Yuxuan Shu et al. Revisiting Self-Supervised Contrastive Learning for Facial Expression Recognition, **British Machine Vision Conference (BMVC)**, 2022 · Paper | Code | Project

Preprints

Yuxuan Shu et al. CLEF: Clinically-Guided Contrastive Learning for Electrocardiogram Foundation Models, Preprint, 2025 · Paper | Code

Yuxuan Shu et al. Foundation models for biosignals: A survey, Preprint, 2025 · Paper | Code

Yuxuan Shu and Vasileios Lampos Unsupervised hard Negative Augmentation for contrastive learning, Preprint, 2024 · Paper | Code

Presentations

Invited Talks

2026. *Foundation Models for Biosignal Analysis*. Invited Research Talk: Computational Health Informatics (CHI) Lab, University of Oxford, Oxford, UK.

2026. *Time Series Forecasting in the Era of Deep Learning*. Invited Lecture Talk: COMP0084, UCL, London, UK.

2025. *Capturing Variable Dependencies with Deformable Attention for Time Series Forecasting*. Invited Seminar Talk: Financial Computing & Analytics (FCA) Seminar, UCL, London, UK.

Contributed Presentations

Sonnet: Spectral Operator Neural Network for Multivariable Time Series Forecasting. AAAI 2026 Oral, Singapore.

Patents

Patent Filed

System and Algorithms for Pre-training and Fine-tuning of a Single-lead ECG Foundation Model with Clinically Guided Risk Score of Future Health Outcomes — *2025*

Collaborations

Dr Xiao Gu, University of Oxford. Joint research on foundation models and biosignal analysis.

Dr Mohammad Malekzadeh, Microsoft (formerly Nokia Bell Labs). Collaboration on ECG foundation models.

Honors & Scholarships

2022–2026 **UCL CS Departmental Funds for PhD Studentship**, University College London
2021–2022 **Hamlyn Prize**, Top 3 student, Imperial College London
2017–2018 **Academic Excellency Scholarship**, Top 5%; Wuhan University

Teaching Experience

COMP0084 Information Retrieval and Data Mining — *University College London*
Graduate Teaching Assistant — *2023–2024; 2024–2025*

COMP0087 Statistical Natural Language Processing — *University College London*
Graduate Teaching Assistant — *2023–2024; 2024–2025*

COMP0257 Advanced Topics in Financial Modeling and Technologies — *University College London*
Graduate Teaching Assistant — *2024–2025; 2025–2026*

Outreach & Professional Development

Peer Review Reviewed 50+ papers at top-tier ML/AI conferences: NeurIPS, ICML, ICLR, AAAI, AISTATS, ACL, EMNLP.

Open-Source Contributions Open-sourced all research implementations; projects have 150+ GitHub stars.

Technical Skills

Deep Learning Transformers, diffusion models, self-supervised and contrastive learning, multivariate time series modeling, uncertainty quantification, probabilistic forecasting.

Frameworks PyTorch, PyTorch Lightning, TensorFlow, HuggingFace, scikit-learn, NumPy, Pandas.

Engineering Distributed training pipelines, large-scale data preprocessing, experiment tracking (Weights & Biases, Hydra), reproducible research practices.

DevOps Docker, Git, CI/CD workflows, model evaluation and benchmarking.