

Erfan Loweimi

CONTACT INFORMATION	<ul style="list-style-type: none">• E-mail: e.loweimi@ed.ac.uk• Website• Google Scholars• LinkedIn• ResearchGate• ORCiD
RESEARCH INTERESTS	<ul style="list-style-type: none">✓ Conversational AI✓ End-to-end Speech Processing✓ Explainable and Trustworthy AI
CAREER	<ul style="list-style-type: none">• Machine Learning Engineer, CollabAI, Cisco (2025-)• Research Fellow in Machine Learning, University of Edinburgh (2024-)• Research Associate, University of Cambridge (2022 - 2024)• Research Associate, King's College London (2021 - 2023)• Research Associate, University of Edinburgh (2018 - 2021)
EDUCATION	Ph.D., School of Computer Science, University of Sheffield, 2018 (Thesis ) - Speech and Hearing Research Group (SPAndH) - Supervisors: Professor Jon Barker and Professor Thomas Hain
SELECTED PUBLICATIONS	<p>Journal Papers</p> <ol style="list-style-type: none">1. A. Núñez García, S. de la Fuente García, E. Loweimi, M. Masoodian, R. Vieira, A. Rodrigues, and S. Luz, "A study protocol for assessing the effects of intangible cultural heritage experiences on human well-being," <i>PLOS ONE</i>, Nov. 12, 2025, doi: 10.1371/journal.pone.0336120.2. S. Hosseini, G. Chinello, G. Lindsay, E. Loweimi, M. A. Ansari, and D. McGlinchey, "Transfer Learning for Data-Driven Wet Gas Flow Metering: Enhancing Generalisation in Digital Measurement Systems," <i>Flow Measurement and Instrumentation</i>, p. 103146, 2025, doi: 10.1016/j.flowmeasinst.2025.103146.3. Z. Yue, E. Loweimi, Z. Cvetkovic, J. Barker, and H. Christensen, "Raw acoustic-articulatory multimodal dysarthric speech recognition," <i>Computer Speech & Language</i>, vol. 95, Art. no. 101839, 2026, doi: 10.1016/j.csl.2025.101839.4. G. Wu, A. Haider, X. Tian, E. Loweimi, Ch-H.Chan, M. Qian, A. Muhammad, I. Spence, R. Cooper, W.W.Y. Ng, J. Kittler, M. Gales and H. Wang, "Multi-modal Video Search by Examples – A Video Quality Impact Analysis," <i>IET Computer Vision</i>, pp. 1-17, 2024, doi: 10.1049/cvi2.12303.5. E. Loweimi, A. Carmantini, P. Bell, S. Renals and Z. Cvetkovic, "Phonetic Error Analysis Beyond Phone Error Rate," <i>IEEE/ACM Transactions on Audio, Speech and Language Processing</i>, vol. 31, pp. 3346-3361, 2023.6. E. Loweimi, Z. Yue, P. Bell, S. Renals and Z. Cvetkovic, "Multi-stream Acoustic Modelling using Raw Real and Imaginary Parts of the Fourier Transform," <i>IEEE/ACM Transactions on Audio, Speech and Language Processing</i>, vol. 31, pp. 876-890, 2023.7. Z. Yue*, E. Loweimi*, J. Barker, H. Christensen and Z. Cvetkovic, "Acoustic Modelling from Raw Source and Filter Components for Dysarthric Speech Recognition," <i>IEEE/ACM Transactions on Audio, Speech and Language Processing</i>, vol. 30, pp. 2968-2980, 2022 (* Equal contribution). <p>Conference Papers</p>

1. Z. Yue, D. Kayande, Z. Cvetkovic, and **E. Loweimi**, “Probing Whisper for Dysarthric Speech in Detection and Assessment”, *ICASSP*, 2026 (Accepted).
2. K. Fatehi, A. Shirian, and **E. Loweimi**, “FinHuBERT: Hierarchical Feature Imitating Networks for Low-Resource Speech Recognition”, *ICASSP*, 2026 (Accepted).
3. **E. Loweimi**, S. De La Fonte Garcia, and S. Luz, “Zero-Shot Speech-Based Depression and Anxiety Assessment with LLMs”, *INTERSPEECH*, 2025.
4. Z. Yue, et al, “Challenges and Practical Guidelines for Atypical Speech Data Collection, Annotation, Usage and Sharing: A Multi-project Perspective”, *INTERSPEECH*, 2025.
5. **E. Loweimi**, M. Qian, K. Knill and M. Gales, “On the Usefulness of Speaker Embeddings for Speaker Retrieval in the Wild: A Comparative Study of x-vector and ECAPA-TDNN Models,” *INTERSPEECH*, 2024.
6. M. Qian, R. Ma, A. Liusie, **E. Loweimi**, K. Knill, and M. Gales, “Zero-shot Audio Topic Reranking using Large Language Models”, *SLT*, 2024.
7. **E. Loweimi**, A. Carmantini, P. Bell, S. Renals, Z. Cvetkovic “Phonetic Error Analysis of Raw Waveform Acoustic Models with Parametric and Non-Parametric CNNs,” *arXiv* , 2024.
8. Z. Yue*, **E. Loweimi*** and Z. Cvetkovic, “Dysarthric Speech Recognition, Detection and Classification using Raw Phase and Magnitude Spectra,” *INTERSPEECH*, 2023 (* Equal contribution).
9. Z. Yue*, **E. Loweimi***, J. Barker, H. Christensen and Z. Cvetkovic, “Dysarthric Speech Recognition from Raw Waveform with Parametric CNNs,” *INTERSPEECH*, 2022 (* Equal contribution).
10. N. Shao, **E. Loweimi** and X. Li, “RCT: Random Consistency Training for Semi-supervised Sound Event Detection,” *INTERSPEECH*, 2022.
11. Z. Yue*, **E. Loweimi*** and Z. Cvetkovic, “Raw Source and Filter Modelling for Dysarthric Speech Recognition,” *ICASSP*, 2022 (* Equal contribution).
12. Z. Yue, **E. Loweimi**, Z. Cvetkovic, H. Christensen and J. Barker, “Multimodal Acoustic-Articulatory Feature Fusion for Dysarthric Speech Recognition,” *ICASSP*, 2022.
13. **E. Loweimi**, P. Bell and S. Renals, “Speech Acoustic Modelling using Raw Source and Filter Components,” *INTERSPEECH*, 2021.
14. S. Zhang, **E. Loweimi**, P. Bell and S. Renals, “Stochastic Attention Head Removal: A Simple and Effective Method for Improving Transformer Based ASR Models,” *INTERSPEECH*, 2021.
15. **E. Loweimi**, Z. Cvetkovic, P. Bell and S. Renals, “Speech Acoustic Modelling from Raw Phase Spectrum,” *ICASSP*, 2021.
16. S. Zhang, C-T. Do, R. Doddipatla, **E. Loweimi**, P. Bell and S. Renals, “Train your classifier first: Cascade Neural Networks Training from Upper Layers to Lower Layers,” *ICASSP*, 2021.
17. **E. Loweimi**, P. Bell and S. Renals, “Raw Sign and Magnitude Spectra for Multi-head Acoustic Modelling,” *INTERSPEECH*, 2020.
18. **E. Loweimi**, P. Bell and S. Renals, “On the Robustness and Training Dynamics of Raw Waveform Models,” *INTERSPEECH*, 2020.

19. S. Zhang, **E. Loweimi**, P. Bell, S. Renals, “When Can Self-Attention Be Replaced by Feed Forward Layers?,” *SLT*, 2020.
20. J. Fainberg, O. Klejch, **E. Loweimi**, P. Bell, S. Renals, “Acoustic Model Adaptation from Raw Waveforms with SincNet,” *ASRU*, 2019.
21. **E. Loweimi**, P. Bell and S. Renals, “On Learning Interpretable CNNs with Parametric Modulated Kernel-based Filters,” *INTERSPEECH*, 2019.
22. S. Zhang, **E. Loweimi**, Y. Xu, P. Bell, S. Renals “Trainable Dynamic Subsampling for End-to-End Speech Recognition,” *INTERSPEECH*, 2019.
23. M.A. Jalal, **E. Loweimi**, R. Moore and T. Hain, “Learning Temporal Clusters Using Capsule Routing for Speech Emotion Recognition,” *INTERSPEECH*, 2019.
24. **E. Loweimi**, P. Bell and S. Renals, “On the Usefulness of Statistical Normalisation of Bottleneck Features for Speech Recognition,” *ICASSP*, 2019.
25. S. Zhang, **E. Loweimi**, P. Bell, S. Renals, “Windowed Attention Mechanisms for Speech Recognition,” *ICASSP*, 2019.
26. **E. Loweimi**, J. Barker and T. Hain, “On the Usefulness of the Speech Phase Spectrum for Pitch Extraction,” *INTERSPEECH*, 2018.
27. **E. Loweimi**, J. Barker and T. Hain, “Exploring the use of Group Delay for Generalised VTS based Noise Compensation,” *ICASSP*, 2018.
28. **E. Loweimi**, J. Barker and T. Hain, “Channel Compensation in the Generalised Vector Taylor Series Approach to Robust ASR,” *INTERSPEECH*, 2017.
29. **E. Loweimi**, J. Barker, O. Saz Torralba and T. Hain, “Robust Source-Filter Separation of Speech Signal in the Phase Domain,” *INTERSPEECH*, 2017.
30. **E. Loweimi**, J. Barker and T. Hain, “Statistical Normalisation of Phase-based Feature Representation for Robust Speech Recognition,” *ICASSP*, 2017.
31. **E. Loweimi**, J. Barker and T. Hain, “Use of Generalised Nonlinearity in VTS Noise Compensation for Robust Speech Recognition,” *INTERSPEECH*, 2016.
32. **E. Loweimi**, J. Barker and T. Hain, “Source-filter Separation of Speech Signal in the Phase Domain,” *INTERSPEECH*, 2015.
33. **E. Loweimi**, S.M. Ahadi and T. Drugman, “A New Phase-based Feature Representation for Robust Speech Recognition,” *ICASSP*, 2013.
34. **E. Loweimi**, M. Doulaty, J. Barker and T. Hain, “Long-term statistical Feature Extraction from Speech Signal and its Application in Emotion Recognition,” *Statistical Language and Speech Processing (SLSP)*, 2015.
35. **E. Loweimi**, S.M. Ahadi, T. Drugman and S. Loveymi, “On the Importance of Pre-emphasis and Window Shape in Phase-based Speech Recognition,” *Lecture Notes in Computer Science*, vol. 7911 LNAI, 2013.
36. **E. Loweimi**, S.M. Ahadi and H. Sheikhzadeh, “Phase-only Speech Reconstruction Using Very Short Frames,” *INTERSPEECH*, 2011.
37. **E. Loweimi** and S.M. Ahadi, “A New Group Delay-based Feature for Robust Speech Recognition,” *ICME*, 2011.
38. **E. Loweimi**, S.M. Ahadi and S. Loveymi, “On the Importance of Phase and Magnitude Spectra in Speech Enhancement,” *ICEE*, 2011.
39. **E. Loweimi** and S.M. Ahadi, “Objective Evaluation of Magnitude and Phase only Spectrum-based Reconstruction of the Speech Signal,” *ISCCSP*, 2010.

AWARDS

- Outstanding Reviewer Award, ICASSP, 2022
- Research Communicator of the Year Award, University of Sheffield, 2017
- ISCA Student Travel Grant, INTERSPEECH, 2017
- Faculty PhD Scholarship (2013-2017), Faculty of Engineering, University of Sheffield

TEACHING EXPERIENCE

Teaching Assistant (Two semesters each)

- Postgraduate
 - Machine Learning and Adaptive Intelligence
 - Speech Technology
 - Speech Processing
- Undergraduate
 - Data-driven Computing
 - Electronics II

SELECTED ORAL PRESENTATIONS

Tutorial Talks

- E. Loweimi and S. Loveymi, “Recent Advances in Interpreting and Understanding DNNs”, Machine Vision & Image Processing (MVIP) Conference, 2022, Iran.
- Internal Tutorial ↗
 - Contrastive Learning, Deep Scattering Spectrum, Transformers, Overparameterisation in DNNs (three sessions), Raw Waveform Acoustic Modelling (four sessions), Capsule Neural Networks, Information Bottleneck, Kernel methods in ASR

Research Talks

- From Speech to Insight: Foundation Models for Qualitative Analysis and Mental Health Research
 - Usher Institute, University of Edinburgh, Edinburgh, UK, 2025
- Speaker Retrieval in the Wild: Challenges, Effectiveness, Robustness
 - BBC Broadcasting House, London, UK, 2024
 - University of Cambridge, Cambridge, UK, 2024
- Speech Acoustic Modelling from Raw Signal Representations
 - Edinburgh Napier University, Edinburgh, UK, 2022
- CSTR Talk, University of Edinburgh (Internal)
 - Speaker Retrieval in the Wild: Challenges, Effectiveness, Robustness, 2025
 - Phonetic Error Analysis beyond Phone Error Rater, 2023
 - On the Robustness and Training Dynamics of Raw Waveform Models, 2021
 - Raw Sign and Magnitude Spectra for Multi-head Acoustic Modelling, 2020
 - Understanding and Interpreting DNNs for Speech Recognition, 2019
 - Speech Phase Spectrum: Love It or Leave It?, 2018
- DNN Statistical Interpretation and Normalisation for ASR
 - Qatar Computing Research Institute (QCRI), Doha, Qatar, 2019
- Channel Compensation in the Generalised VTS Approach to Robust ASR
 - UKSpeech, Cambridge, UK, 2017
 - INTERSPEECH, Sweden, 2017
- Source-filter Separation of Speech Signal in the Phase Domain
 - UKSpeech 2015, Norwich, UK, 2015

Other Talks

- AI: From Zero to Aha!
 - Business School, University of Edinburgh, Edinburgh, UK, 2025
- Genie in the mike! The Science of Talking (with) Machines
 - A Pint of Science Festival, Sheffield, UK. 15, May, 2017; Teaser
- Signal Processing is Dead(?)! Long Live DNN!
 - Machine Intelligence for Natural Interfaces (MINI) workshop, Sheffield, 2016
- Deep Learning, The End of History and The Last Computer Scientist
 - A Pint of Science Festival, Sheffield, 2016
- Ethics in Data Modelling; Love it or Leave it?
 - Research Ethics and Integrity module, University of Sheffield, 2014

ROLES

- Meta Reviewer (Speech Recognition), ICASSP 2026
- Lead Area Chair (Speech Recognition), INTERSPEECH 2025
- Meta Reviewer (Speech Recognition), ICASSP 2025
- Area Chair (Speech Recognition), INTERSPEECH 2024
- Meta Reviewer (Speech Analysis), ICASSP 2024
- UK and Ireland Speech (UKIS) Steering Committee Member (2024-)
- UK and Ireland Speech (UKIS) Conference Co-organiser, Cambridge, UK, 2024
- Area Chair (Speech and Multimodality), EMNLP 2023
- Area Chair (Speech Recognition), INTERSPEECH 2023
- Meta Reviewer (Speech Analysis), ICASSP 2023
- Associate Member of IEEE's Speech & Language Processing Technical Committee (SLTC) (2023-2026)
- Cambridge Engineering Dep. Speech Group Seminars Co-organiser 2023-2024
- Reviewer (INTERSPEECH, ICASSP, ASRU, SLT, Speech Communication, ITASLP)
- Scientific Committee Member of ICASSP 2023 AMHAT Workshop
- Publication Chair in Spoken Language Technology Workshop (SLT) 2022
- Session Chair (ICASSP, INTERSPEECH, SLT)
- Co-supervising one PhD student, University of Edinburgh (2018-2021)
- Primary supervisor of four MSc students, University of Edinburgh (2019-2021)
- Examiner of more than 15 MSc dissertations, University of Edinburgh (2019-2021)
- UKSpeech 2016 Co-organiser, Sheffield, UK, 2016
- Speech and Hearing Research Group (SPandH) Seminar Co-organiser 2015-2017

SKILLS

Computer: Python, PyTorch, Kaldi, Shell scripting, Linux, Docker, Latex, Office

Language: English (Fluent), Arabic (Native), Persian (Native)

MEMBERSHIPS

ISCA Member

IEEE Member

IEEE SPS Member

REFERENCES

- ✓ Mark Gales, Professor in Information Engineering
 - University of Cambridge, Cambridge, UKE-mail: mjfg@eng.cam.ac.uk
- ✓ Zoran Cvetkovic, Professor in Signal Processing
 - King's College London, London, UKE-mail: zoran.cvetkovic@kcl.ac.uk
- ✓ Peter Bell, Professor in Speech Technology
 - University of Edinburgh, Edinburgh, UKE-mail: peter.bell@ed.ac.uk