

Erfan Loweimi

CONTACT INFORMATION

- E-mail: e.loweimi@ed.ac.uk
- [Website](#) [Google Scholars](#) [LinkedIn](#) [ResearchGate](#) [ORCID](#)

RESEARCH INTERESTS

- ✓ Conversational AI
- ✓ End-to-end Speech Processing
- ✓ Explainable and Trustworthy AI

CAREER

- 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

Journal Papers

1. Z. Yue, **E. Loweimi**, Z. Cvetkovic, J. Barker, and H. Christensen, "Raw acoustic-articulatory multimodal dysarthric speech recognition," *Computer Speech & Language*, vol. 95, Art. no. 101839, 2026, doi: 10.1016/j.csl.2025.101839.
2. 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," *IET Computer Vision*, pp. 1–17, 2024, doi: 10.1049/cvi2.12303.
3. **E. Loweimi**, A. Carmantini, P. Bell, S. Renals and Z. Cvetkovic, "Phonetic Error Analysis Beyond Phone Error Rate," *IEEE/ACM Transactions on Audio, Speech and Language Processing*, vol. 31, pp. 3346-3361, 2023.
4. **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," *IEEE/ACM Transactions on Audio, Speech and Language Processing*, vol. 31, pp. 876-890, 2023.
5. Z. Yue*, **E. Loweimi***, J. Barker, H. Christensen and Z. Cvetkovic, "Acoustic Modelling from Raw Source and Filter Components for Dysarthric Speech Recognition," *IEEE/ACM Transactions on Audio, Speech and Language Processing*, vol. 30, pp. 2968-2980, 2022 (* Equal contribution).

Conference Papers

1. **E. Loweimi**, S. De La Fonte Garcia, and S. Luz, "Zero-Shot Speech-Based Depression and Anxiety Assessment with LLMs", *INTERSPEECH*, 2025.
2. Z. Yue, et al, "Challenges and Practical Guidelines for Atypical Speech Data Collection, Annotation, Usage and Sharing: A Multi-project Perspective", *INTERSPEECH*, 2025.
3. **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.

4. M. Qian, R. Ma, A. Liusie, **E. Loweimi**, K. Knill, and M. Gales, “Zero-shot Audio Topic Reranking using Large Language Models”, *SLT*, 2024.
5. **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.
6. Z. Yue*, **E. Loweimi*** and Z. Cvetkovic, “Dysarthric Speech Recognition, Detection and Classification using Raw Phase and Magnitude Spectra,” *INTERSPEECH*, 2023 (* Equal contribution).
7. Z. Yue*, **E. Loweimi***, J. Barker, H. Christensen and Z. Cvetkovic, “Dysarthric Speech Recognition from Raw Waveform with Parametric CNNs,” *INTERSPEECH*, 2022 (* Equal contribution).
8. N. Shao, **E. Loweimi** and X. Li, “RCT: Random Consistency Training for Semi-supervised Sound Event Detection,” *INTERSPEECH*, 2022.
9. Z. Yue*, **E. Loweimi*** and Z. Cvetkovic, “Raw Source and Filter Modelling for Dysarthric Speech Recognition,” *ICASSP*, 2022 (* Equal contribution).
10. Z. Yue, **E. Loweimi**, Z. Cvetkovic, H. Christensen and J. Barker, “Multimodal Acoustic-Articulatory Feature Fusion for Dysarthric Speech Recognition,” *ICASSP*, 2022.
11. **E. Loweimi**, P. Bell and S. Renals, “Speech Acoustic Modelling using Raw Source and Filter Components,” *INTERSPEECH*, 2021.
12. 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.
13. **E. Loweimi**, Z. Cvetkovic, P. Bell and S. Renals, “Speech Acoustic Modelling from Raw Phase Spectrum,” *ICASSP*, 2021.
14. 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.
15. **E. Loweimi**, P. Bell and S. Renals, “Raw Sign and Magnitude Spectra for Multi-head Acoustic Modelling,” *INTERSPEECH*, 2020.
16. **E. Loweimi**, P. Bell and S. Renals, “On the Robustness and Training Dynamics of Raw Waveform Models,” *INTERSPEECH*, 2020.
17. S. Zhang, **E. Loweimi**, P. Bell, S. Renals, “When Can Self-Attention Be Replaced by Feed Forward Layers?,” *SLT*, 2020.
18. J. Fainberg, O. Klejch, **E. Loweimi**, P. Bell, S. Renals, “Acoustic Model Adaptation from Raw Waveforms with SincNet,” *ASRU*, 2019.
19. **E. Loweimi**, P. Bell and S. Renals, “On Learning Interpretable CNNs with Parametric Modulated Kernel-based Filters,” *INTERSPEECH*, 2019.
20. S. Zhang, **E. Loweimi**, Y. Xu, P. Bell, S. Renals “Trainable Dynamic Subsampling for End-to-End Speech Recognition,” *INTERSPEECH*, 2019.
21. M.A. Jalal, **E. Loweimi**, R. Moore and T. Hain, “Learning Temporal Clusters Using Capsule Routing for Speech Emotion Recognition,” *INTERSPEECH*, 2019.

22. **E. Loweimi**, P. Bell and S. Renals, “On the Usefulness of Statistical Normalisation of Bottleneck Features for Speech Recognition,” *ICASSP*, 2019.
23. S. Zhang, **E. Loweimi**, P. Bell, S. Renals, “Windowed Attention Mechanisms for Speech Recognition,” *ICASSP*, 2019.
24. **E. Loweimi**, J. Barker and T. Hain, “On the Usefulness of the Speech Phase Spectrum for Pitch Extraction,” *INTERSPEECH*, 2018.
25. **E. Loweimi**, J. Barker and T. Hain, “Exploring the use of Group Delay for Generalised VTS based Noise Compensation,” *ICASSP*, 2018.
26. **E. Loweimi**, J. Barker and T. Hain, “Channel Compensation in the Generalised Vector Taylor Series Approach to Robust ASR,” *INTERSPEECH*, 2017.
27. **E. Loweimi**, J. Barker, O. Saz Torralba and T. Hain, “Robust Source-Filter Separation of Speech Signal in the Phase Domain,” *INTERSPEECH*, 2017.
28. **E. Loweimi**, J. Barker and T. Hain, “Statistical Normalisation of Phase-based Feature Representation for Robust Speech Recognition,” *ICASSP*, 2017.
29. **E. Loweimi**, J. Barker and T. Hain, “Use of Generalised Nonlinearity in VTS Noise Compensation for Robust Speech Recognition,” *INTERSPEECH*, 2016.
30. **E. Loweimi**, J. Barker and T. Hain, “Source-filter Separation of Speech Signal in the Phase Domain,” *INTERSPEECH*, 2015.
31. **E. Loweimi**, S.M. Ahadi and T. Drugman, “A New Phase-based Feature Representation for Robust Speech Recognition,” *ICASSP*, 2013.
32. **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.
33. **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.
34. **E. Loweimi**, S.M. Ahadi and H. Sheikhzadeh, “Phase-only Speech Reconstruction Using Very Short Frames,” *INTERSPEECH*, 2011.
35. **E. Loweimi** and S.M. Ahadi, “A New Group Delay-based Feature for Robust Speech Recognition,” *ICME*, 2011.
36. **E. Loweimi**, S.M. Ahadi and S. Loveymi, “On the Importance of Phase and Magnitude Spectra in Speech Enhancement,” *ICEE*, 2011.
37. **E. Loweimi** and S.M. Ahadi, “Objective Evaluation of Magnitude and Phase only Spectrum-based Reconstruction of the Speech Signal,” *ISCCSP*, 2010.

UNDER REVIEW Journal Papers

1. **E. Loweimi**, De La Fonte Garcia, S. Luz “Zero-Shot Speech-based Mental Health and Affective State Assessment Using LLMs,” *Submitted to IEEE Journal of Selected Topics in Signal Processing*.
2. **E. Loweimi**, M. Qian, K. Knill, M. Gales “Speaker Retrieval in the Wild: Challenges, Effectiveness and Robustness,” *Submitted to Speech Communication*.
3. **E. Loweimi***, Z. Yue*, Z. Cvetkovic “Deep Scattering Spectrum for Dysarthric Speech Recognition, Detection and Classification,” *Submitted to IEEE Journal of Selected Topics in Signal Processing (* Equal contribution)*.

Conference Papers

1. **E. Loweimi**, De La Fonte Garcia, S. Luz “Predicting Psychological Well-Being from Spontaneous Speech using LLMs,” *Submitted to ICASSP 2026*.
2. Z. Yue, D. Kayande, Z. Cvetkovic, **E. Loweimi** “Probing Whisper for Dysarthric Speech in Detection and Assessment,” *Submitted to ICASSP 2026*.
3. K. Fatehi, A. Shirian, **E. Loweimi** “FinHuBERT: Hierarchical Feature Imitating Networks for Low-Resource Speech Recognition,” *Submitted to ICASSP 2026*.

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

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