

# Erfan Loweimi

<b>CONTACT INFORMATION</b>	<ul style="list-style-type: none"><li>• E-mail: <a href="mailto:e.loweimi@ed.ac.uk">e.loweimi@ed.ac.uk</a></li><li>• <a href="#">Website</a></li><li>• <a href="#">Google Scholars</a></li><li>• <a href="#">LinkedIn</a></li><li>• <a href="#">ResearchGate</a></li><li>• <a href="#">ORCiD</a></li></ul>
<b>RESEARCH INTERESTS</b>	<ul style="list-style-type: none"><li>✓ Conversational AI</li><li>✓ End-to-end Speech Processing</li><li>✓ Explainable and Trustworthy AI</li></ul>
<b>CAREER</b>	<ul style="list-style-type: none"><li>• Machine Learning Engineer, CollabAI, Cisco (2025-)</li><li>• Research Fellow in Machine Learning, University of Edinburgh (2024-)</li><li>• Research Associate, University of Cambridge (2022 - 2024)</li><li>• Research Associate, King's College London (2021 - 2023)</li><li>• Research Associate, University of Edinburgh (2018 - 2021)</li></ul>
<b>EDUCATION</b>	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
<b>SELECTED PUBLICATIONS</b>	<p><b>Journal Papers</b></p> <ol style="list-style-type: none"><li>1. A. Núñez García, S. de la Fuente García, <b>E. Loweimi</b>, 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.</li><li>2. S. Hosseini, G. Chinello, G. Lindsay, <b>E. Loweimi</b>, 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.</li><li>3. Z. Yue, <b>E. Loweimi</b>, Z. Cvetkovic, J. Barker, and H. Christensen, "Raw acoustic-articulatory multimodal dysarthric speech recognition," <i>Computer Speech &amp; Language</i>, vol. 95, Art. no. 101839, 2026, doi: 10.1016/j.csl.2025.101839.</li><li>4. G. Wu, A. Haider, X. Tian, <b>E. Loweimi</b>, 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.</li><li>5. <b>E. Loweimi</b>, 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.</li><li>6. <b>E. Loweimi</b>, 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.</li><li>7. Z. Yue*, <b>E. Loweimi*</b>, 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).</li></ol>

## Conference Papers

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, Linux, Office, Docker, L<sup>A</sup>T<sub>E</sub>X

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