Mengjie Qian

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Education

University of Birmingham (UoB) Birmingham, UK

Ph.D. in School of Engineering 2016–2021

- Thesis title: "Computer Analysis of Children's Non-Native English Speech for Language Learning and Assessment".
- Supervisors: Prof. Martin Russell, Dr Peter Jančovič.

University of Science and Technology of China (USTC) Hefei, China

MSc in Department of Electronic Engineering and Information Science (EEIS) 2014–2016

- Project title: "Deep Learning of ASR for Children's Speech".
- Supervisors: Prof. Ian McLoughlin, Dr Wu Guo, Prof. Li-Rong Dai.
- Weighted Score: 89/100.

University of Science and Technology of China (USTC) Hefei, China

B.S. in Department of EEIS 2010–2014

- Final-year project title: "Natural Language Understanding in a Smart Home".
- GPA: 3.68/4.30, Weighted Score: 86.64/100, Rank: 34/133.

Work Experience

Engineering Department at the Cambridge University Cambridge, UK

Research Associate Apr. 2021–Current

- Key contributor in the EPSRC-funded Multimodal Video Search by Examples (MVSE) project, and the Cambridge Assessment-funded Automated Language Teaching and Assessment (ALTA) project.
- Conducted research on error correction techniques for End-to-End Automatic Speech Recognition (ASR).
- Proposed adaptation approaches for black-box ASR engines.
- Won the TREC Conversational Assistance Track (CAsT) challenge 2022, which aimed to retrieve relevant responses for a prompt given a conversation.
- Explored methods for detecting mispronunciations in spoken language tests.
- Investigated the application of speaker diarisation techniques for conversational-style spoken language tests.

Trinity College Dublin Dublin, Ireland

Part-time Research Associate (remotely), Phonetics and Speech Laboratory May 2020–Current

- Initiated the development of ASR systems for Irish, achieving a remarkable improvement in system performance from a Word-Error-Rate (WER) of 61.98% to 14.33%.
- Investigated the use of large pretrained models for Irish speech recognition and dialect recognition.
- Engaged in the development of End-to-End speech recognition systems for Irish.
- Explored Irish dialect recognition for the three major dialects of Irish.
- Built a keyword spotting system capable of recognizing a comprehensive list of Irish vocabulary.

Amazon Development Center Cambridge, UK

Applied Scientist Intern Dec. 2018–Mar. 2019

- Worked on natural language generation (NLG) and speech synthesis in the TTS Research group.
- Successfully developed a sophisticated movie review generation system that allows for precise control over the review style of both the generated text and the subsequent speech synthesis.

Speech Scientist Intern Jul. 2018–Nov. 2018

- Worked on active learning for ASR bootstrapping.
- Proposed novel data selection methods resulting in a significant relative reduction of 12.3% in WER.

Academic Experience

- **Reviewer**: Regular reviewer for conferences and journals, including:
  - Computer Speech and Language (CSL)
  - ICASSP
  - SLaTE
  - INTERSPEECH
  - ASRU
- **Organisers** of conferenses, workshops and challenges:
  - Served as a member of the Organizing Committee of SLaTE 2023
  - Successfully organised the Spoken CALL Shared Task challenge in 2018 and 2019
  - Co-organised UK Speech 2019 in Birmingham, UK
- **Supervision**
  - Co-supervising one PhD student, Trinitty College Dublin, Ireland. 2021–2023
  - Co-supervising Master and Bachelor students, Cambridge University, UK. 2022–2023
- **Teaching Assistant**: From 2016 to 2021, worked as a post-graduate teaching assistant for multiple undergraduate/postgraduate modules in the School of Engineering, University of Birmingham. Led small group teaching, conducted lab demonstrations, and contributed to various modules. Notable modules include:
  - MSc Introductory Module for Computer/Communications/Power Engineering
  - Fundamentals of Signals and Systems
  - Data Mining
  - Multimedia Speech, Audio Processing and Music
  - Computing for Engineers
  - Introduction for Communications and Computers
  - Advanced Mechanics
  - Algorithms and Data Structures
  - Engineering Mathematics 1/2
  - Systems Modelling and Management
  - Foundation Mathematics
- Delivered oral and poster **presentations** at international conferences:
  - INTERSPEECH, SLaTE, UK Speech.
- In charge of the Linux workstation of the Speech Group, Department of EESE, UoB.

Scholarships and Awards

- 1^{st} place in the TREC Conversational Assistance Track (CAsT) challenge. **2022**
- 4^{th} place in the Shared Task on Automatic Speech Recognition for Non-Native Children's Speech (Interspeech 2020 Special Session). **2020**
- Interspeech 2018 ISCA Student Travel Grant. **2018**
- 1^{st} and 2^{nd} places in the 2017 Spoken CALL Shared Task. **2017**
- School of Engineering Scholarship, University of Birmingham, UK. **2016–2020**
- 3^{rd} prize of the 10th National Graduate Student Mathematical Contest in modeling, China. **2015**
- First Class Academic Scholarship, USTC, China. **2014**
- Outstanding Undergraduate Student, USTC, China. **2014**
- "Sun Guosheng" Leadership Scholarship, USTC, China. **2013**

Technical Strengths

Programming (advanced): Python, Perl, C, MATLAB, Shell.
Tools/Software: Pytorch, Kaldi, Fairseq, ESPNET, HTK, MXNet, THEANO, TensorFlow.

Other Activities

2023	Participated in the RisingWISE Entrepreneurship Programme.
2018–Current	1900+ days streak on Duolingo (keeps increasing).
2014–2017	Accomplished half marathon three times.
2014–2015	Vice chairman of Graduate Students Union, Department of EEIS, USTC.

Publications

1. R. Ma*, **M. Qian***, K. Knill, M. Gales, "Adapted an Unadaptable ASR System", in *Proc. of Interspeech, Dublin, Ireland*, 2023 (accepted).
2. R. Ma, K. Knill, M. Gales, **M. Qian**, "N-best T5: Robust ASR Error Correction using Multiple Input Hypotheses and Constrained Decoding Space",*Proc. of Interspeech, Dublin, Ireland*, 2023 (accepted).
3. L. Lonergan, **M. Qian**, C. Gobl, A. N. Chasaide, "Towards dialect-inclusive recognition in a low-resource language: are balanced corpora the answer?", *Proc. of Interspeech, Dublin, Ireland*, 2023 (accepted).
4. L. Lonergan, **M. Qian**, N. N. Chiaráin, C. Gobl, A. N. Chasaide, "Towards Spoken Dialect Identification of Irish", in Special Interest Group on Under-resourced Languages (SIGUL), 2023 (accepted).
5. A. Liusie, **M. Qian**, X. Li, M. Gales, "University of Cambridge at TREC CAsT 2022", in *TREC* 2022.
6. L. Lonergan, **M. Qian**, N. N. Chiaráin, C. Gobl, A. N. Chasaide, "Cross-dialect lexicon optimisation for an endangered language ASR system: the case of Irish", in *Proc. of Interspeech, Incheon, Korea*, 2022.
7. **M. Qian**, H. Berthelsen, L. Lonergan, A. N. Chasaide, et al., "Automatic Speech Recognition for Irish: testing lexicons and language models", in *Irish Signals and Systems Conference (ISSC)*, 2022.
8. L. Lonergan, **M. Qian**, H. Berthelsen, A. Murphy, C. Wendler, N. N. Chiaráin, C. Gobl, A. N. Chasaide, "Automatic Speech Recognition for Irish: the ABAIR-ÉIST System", in Language Resources and Evaluation Conference (LREC), 2022.
9. **M. Qian**, P. Jančovič, and M. J. Russell, "The University of Birmingham 2019 Spoken CALL Shared Task Systems: Exploring the importance of word order in text processing.", in *Proc of SLaTE Workshop, Graz, Austria*, 2019, pp. 11–15.
10. C. Baur, A. Caines, C. Chua, J. Gerlach, **M. Qian**, M. Rayner, M. Russell, H. Strik, and X. Wei, "Overview of the 2019 Spoken CALL Shared Task", in *Proc. of the Eighth SLaTE Workshop, Graz, Austria*, 2019, pp. 1–5.
11. **M. Qian**, X. Wei, P. Jančovič, and M. J. Russell, "The University of Birmingham 2018 Spoken CALL Shared Task Systems.", in *Proc. of Interspeech, Hyderabad, India*, 2018, pp. 2374–2378.
12. C. Baur, A. Caines, C. Chua, J. Gerlach, **M. Qian**, M. Rayner, M. Russel, H. Strik, and X. Wei, "Overview of the 2018 spoken CALL shared task", in *Proc. of Interspeech, Hyderabad, India*, 2018, pp. 2354–2358.
13. D. Jülg, M. Kunstek, C. P. Freimoser, K. Berkling, and **M. Qian**, "The CSU-K Rule-Based System for the 2nd Edition Spoken CALL Shared Task", in *Proc. of Interspeech, Hyderabad, India*, 2018, pp. 2359–2363.
14. **M. Qian**, L. Bai, P. Jančovič, and M. J. Russell, "Phone Recognition Using a Non-Linear Manifold with Broad Phone Class Dependent DNNs.", in *Proc. of Interspeech, Hyderabad, India*, 2018, pp. 3753–3757.
15. **M. Qian**, X. Wei, P. Jančovič, and M. J. Russell, "The University of Birmingham 2017 SLaTE CALL Shared Task Systems.", in *Proc of SLaTE Workshop, Stockholm, Sweden*, 2017, pp. 91–96.
16. **M. Qian**, I. McLoughlin, W. Guo, and L. Dai, "Mismatched training data enhancement for automatic recognition of children's speech using DNN-HMM", in *2016 10th International Symposium on Chinese Spoken Language Processing (ISCSLP)*, IEEE, 2016, pp. 1–5.