Muhammad Umar Farooq

Doctoral Researcher

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https://umar17.github.io

EDUCATION

- **Ph.D. Computer Science**   2021 – Present
  University of Sheffield   *Sheffield, UK.*
    - Thesis writing phase (Submission by Jan, 2024)
    - **Research topic** Multilingual speech recognition
- **M.Sc. Electrical Engineering**   2017 – 2019
  University of Engineering & Technology   *Lahore, Pakistan.*
    - **CGPA:** 3.68/4.00
    - **Majors:** Computer
- **B.Sc. Electrical Engineering**   2013 – 2017
  University of Engineering & Technology   *Lahore, Pakistan.*
    - **CGPA:** 3.42/4.00
    - **Majors:** Computer & Electronics

SELECTED PUBLICATIONS

For full list, please visit the web page

- **Progressive Unsupervised Domain Adaptation for ASR Using Ensemble Models and Multi-stage Training**
  R. Ahmad, **M. U. Farooq** and T. Hain
  accepted for ICASSP, 2024

- **MUST: A Multilingual Student-Teacher Learning Approach for Low-Resource Speech Recognition**
  M. U. Farooq, R. Ahmad and T. Hain
  ASRU, 2023

- **Learning Cross-lingual Mappings for Data Augmentation to Improve Low-Resource Speech Recognition**
  M. U. Farooq and T. Hain
  Interspeech, 2023

- **Towards Domain Generalisation in ASR with Elitist Sampling and Ensemble Knowledge Distillation**
  R. Ahmad, M. A. Jalal, **M. U. Farooq**, A. Ollerenshaw and T. Hain
  ICASSP, 2023

- **Investigating the Impact of Cross-lingual Acoustic-Phonetic Similarities on Multilingual Speech Recognition**
  M. U. Farooq and T. Hain
  Interspeech, 2022

- **Non-Linear Pairwise Language Mappings for Low-Resource Multilingual Acoustic Model Fusion**
  M. U. Farooq, D. A. H. Narayana and T. Hain
  Interspeech, 2022

- **Improving Large Vocabulary Urdu Speech Recognition System using Deep Neural Networks**
  M. U. Farooq, F. Adeeba, S. Rauf and S. Hussain
  Interspeech, 2019

EXPERIENCE

- **Graduate Teaching Assistant (GTA)**   Sept 2022 - Present
  University of Sheffield, UK.   *for details, please visit Teaching web page*
    - **Department of Computer Science (DCS):** *Sept, 2023 - Present*
    - **Multidisciplinary Engineering Education (MEE):** *Sept, 2022 - May, 2023*
- **Pre-doc Intern**   Sept 2020 - Dec 2020
  Institute of Formal and Applied Linguistics (UFAL)   *Charles University, Prague.*
    - **ELITR:** Worked on speech related components of an EU Horizon2020 project European Live Translator (ELITR)
- **Research Officer**   June 2017 - August 2020
  Center for Language Engineering (CLE)   *KICS, UET Lahore.*
    - **Speech processing:** Developed various speech technologies for the low resource languages being spoken in Pakistan.

Projects

- **Multilingual speech recognition:** Currently focusing on cross-lingual acourstic phonetic similarities
- **European Live Translator (ELITR):** Improved and maintained the speech recognition component of the system
- **Zero-shot Punjabi ASR:** Developed a Punjabi LVCSR without using target-language acoustic data
- **Enhancing Urdu LVCSR for Urdu-English code-switched speech:** Enhanced Urdu LVCSR to improve its performance for embedded English language in spontaneous Urdu speech.
- **Development of LVCSR for Urdu language:** Developed and deployed LVCSR for Urdu language
- **Speaker identification:** Compared the performance of i-vector and x-vector with various feature extraction techniques for short utterances

Conference organisation and relevant experience

- **UK Speech 2023:** Sheffield, UK.
  IT Support Chair, Local Organising Committee UK Speech 2023

- **IEEE O-COCOSDA conference**
  Member Technical Programme Committee (TPC) since 2019

- **Peer reviewer:**
  - Journal of the Acoustical Society of America (JASA)
  - Language Resources and Evaluation (LRE)
  - IEEE China Communications

Workshops & Courses Attended

- **International Spring School of Advance Language Engineering (ISSALE 2019):** Moratuwa, Sri Lanka.
  A two weeks DAAD spring school with courses on *Deep Learning in NLP*, *Grammar Engineering for South Asian Languages*, *Grammar Foundations* and *Computational Linguistics*.

- **CLE Post-Graduate Certificate in Prosodic Analysis Using PRAAT (2019):** Lahore, Pakistan.
  A four days course on analysing prosody, stress and intonation in Urdu language.

- **CLE Post-Graduate Certificate in Experimental Phonology Using PRAAT (2017):** Lahore, Pakistan.
  A four days course on understanding Urdu phonology analysing Urdu speech waveform in PRAAT

Awards and Honors

- **CLE Excellence Award for Research**   2018, 2019
- **CLE Excellence Award for Development**   2017

Memberships

- **International Speech Communication Association (ISCA)**
  Student member
- **ISCA Student Advisory Comittee (ISCA-SAC)**
  Volunteer
- **Institute of Electrical and Electronics Engineers (IEEE)**
  Student member