Mohammed Salah Al-Radhi, PhD

PERSONAL PROFILE

26b Damjanich utca, 02/01, 1071 Budapest, HUNGARY | malradhi@ieee.org | +36 (70) 223-8641

Portfolio: Linkedin, GitHub

CAREER SUMMARY

A registered PhD professional with a solid research background and a teaching portfolio. I am interested in developing a career that combines teaching and research while maintaining my interest in contributing to cutting-edge research and public engagement in the fields of signal speech processing and the broader field of deep learning.

EDUCATION

- Sep 2016 - Sep 2020 **Ph.D.** (100%, hons, summa cum laude)
    - Field: Computer Engineering, Informatics
    - Location: Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics (BME-VIK), Budapest, Hungary
    - Topic: Artificial Intelligence of Speech Processing
    - Dissertation title: High-quality vocoding design with signal processing for speech synthesis and voice conversion
    - Aim: Developing a vocoder and its role in machine deep learning
    - Supervisors: Prof. Habil. Dr. Géza Németh and Assist. Prof. Dr. Tamás Gábor Csapó

- Sep 2011 - Nov 2012 **M.Sc.** (1st class, hons)
    - Field: Communication Systems Engineering
    - Location: Portsmouth University, School of Energy and Electronic Engineering, Portsmouth, UK
    - Topic: Signal Processing
    - Dissertation title: Design of Finite Impulse Response Digital Filters using Optimal Methods
    - Aim: Full GUI digital filters design depending on specifications defined by the user
    - Supervisors: Prof. Dr. Branislav Vuksanovic

- Sep 2003 - Oct 2007 **B.Sc.** (hons)
    - Field: Computer Engineering
    - Location: Basra University, College of Engineering, Basra, Iraq
    - Topic: Control System
    - Dissertation title: Design and Control of a Tank System using PID, Fuzzy Logic, and PLC Integration
    - Aim: investigate, develop, and demonstrate an effective methodology for designing and controlling a tank system
    - Supervisor: Associate Prof. Ali Ahmed

EMPLOYMENT & EXPERIENCE

- Oct 2020 – present   Postdoctoral researcher scientist at BME-VIK
    - AI4Europe: Building a European AI on-demand platform.
    - APH-ALARM: Comprehensive safety solution for people with Aphasia.

- Sep 2017 – Sep 2020   Assistant researcher at BME-VIK
    - OTKA: Silent Speech Interface based on articulatory movements.

TEACHING & SUPERVISING (at BME-VIK)

- Main Supervisor
    - Two PhD students (2023 –)
    - Postgraduate master dissertations (2021 – 2023)
    - Undergraduate BSc dissertations (2020 – 2022)
    - BSc & MSc Project laboratories
- Co-Supervisor
    - Two PhD dissertations (2021 – 2024)
- Delivering teaching sessions on
    - Smart City Laboratory (lab)
    - Deep learning (practice)
    - Info-communication (lecture)
    - Human-Computer Interaction (assessment)
- Assisting with program development and student assessment
- Examiner lead for the theses of student's lab work
- Mentored postgraduate international students
- Interviewed prospective students applying for a PhD degree, assessing their qualifications and potential for research
- Provided academic and career guidance to students, including course selection, research opportunities, and career planning
- Delivered scientific seminars, engaging student audiences and fostering interactive discussions

RESEARCH INTEREST

- Machine and Deep learning
- Speech signal processing
- Text-to-Speech synthesis and neural vocoders
- Voice conversion and conversational speech

AWARDS AND SCHOLARSHIPS:

2020	Ph.D. with hons (100%) & summa cum laude, BME-VIK
2019	Travel and Register Grant, Eastern European Machine Learning Certificate, Google DeepMind, Bucharest, Rumania
2016	PhD Stipendium Hungaricum scholarship, Budapest University of Technology and Economics, Hungary.
2014	Award 1st prize, Rumaila Golden Winner, for Respect – Determination - Personal Ownership - One team, Rumaila operating organization, Iraq.
2012	Award 1st prize, MSc Top Student Certificate – MSc Communication Systems Engineering, University of Portsmouth, UK.
2011	MSc award scholarship, University of Portsmouth, UK.
2008	Award 1st thesis BSc prize, University of Basra, Iraq.

PROFESSIONAL ACTIVITY

2017 – Present	**IEEE** – Member of the Institution of Electrical and Electronic Engineering, Signal Processing Society
2017 – Present	**ISCA** – Member of the International Speech Communication Association
2019 – 2021	**MIEICE** – Member of the Institute of Electronics, Information and Communication Engineers (IEICE), Japan
2012 – 2016	**MIET** – Member of the Institution of Engineering and Technology (IET), England
2016	**Volunteer** – EUSIPCO (24th European Signal Processing Conference), Budapest

REVIEWER

- **Journals:** Computer Speech and Language, Speech Communication, Signal Processing, Artificial Intelligence Review, Digital Signal Processing, IEEE Access, HTE Infocommunication, Multimedia Tools and Applications, IEEE Transactions on Instrumentation & Measurement, Heliyon, Indonesian Journal of Electrical Engineering and Computer Science, MDPI journals.

- **Conferences:** ISCA Interspeech, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), International Joint Conference on Neural Networks (IJCNN), International Conference on Speech Technology and Human-Computer Dialogue (SPeD), The World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI), Voice Conversion challenge.

- **Editorial Board**
  - Lead Guest Editors for Special Issue "New Insights and Techniques for Neural Networks"
  - Mar 2021 - Mar 2023: Topic editor for the journal of Electronics

- For a full list of verified reviews
  http://www.webofscience.com/wos/author/record/C-9727-2018

ATTENDANCE AT CONFERENCES

- **2023**
  - Beszédkutatás (conference of the speech research), 23-24. February, Budapest, Hungary, 2023. [poster]
- **2022**
  - 30th EUSIPCO conference, 29 August - 02 September, Belgrade, Serbia, 2022. [oral]
  - 5th (eng)aging conference on Aging & Technology Fair, 8-9 June, 2022, Prague, Czech Republic. [oral]
- **2021**
  - 22nd Interspeech conference, 30 August - 3 September, Brno, Czechia, 2021. [oral]
  - 11th SpeD conference, 13-15 October, Politehnica University of Timișoara, Timisoara, Romania. [oral]
  - 2nd AIST conference, 12-13 November, Indira Gandhi Delhi Technical University for Women, Delhi, India, 2021. [oral]
  - 2nd IMDC-IST conference, 7-9 September, Sakarya, Turkey, 2021. [oral]
- **2020**
  - 12th ISSP conference, 14-18 December, Providence, USA. [oral]
  - Beszédkutatás (conference of the speech research), 14-15th December, Budapest, Hungary. [oral]
- **2019**
  - 10th SpeD conference, 10-12 October, Politehnica University of Timișoara, Timisoara, Romania, 2019. [oral]
  - 29th IJCNN conference, 14-19 July, Budapest, Hungary, 2019. [oral]
  - 2nd Eastern European Machine Learning, Google DeepMind, 1-6 July, Bucharest, Romania, 2019. [poster]
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- **2018**
  - 20th SPECOM conference, 18-22 September, University of Telecommunications, Leipzig, Germany. [oral]
  - Beszédkutatás (conference of the speech research), Budapest, Hungary, 2018. [oral]
- **2017**
  - 18th Interspeech conference, 21-24 August, Stockholm University, Stockholm, Sweden. [poster]
  - 3rd Doctoral Consortium, ISCA-SAC 17, August 20th, , KTH Royal Institute of Technology, Stockholm, Sweeden. [oral]
  - 19th SPECOM conference, 12-16 September, University of Hertfordshire, Hatfield, England, UK. [oral]
  - 4th TAKTONS & 11th DOGS conference, 22-25 November, Novi Sad, Serbia. [oral]
  - UKSpeech Conference, 11-12 September, Cambridge University, UK. [poster]

TALKS AND RESEARCH SEMINARS

- **2023**
  - Speech Synthesis in the Age of Explainable AI: From Neural Vocoders to Intelligence-Inspired TTS
  - Transforming Voices: A Look at the Present and Future of Expressive Voice Conversion
- **2022**
  - Expressive Speech Synthesis: Present and Possible Futures

FULL PUBLICATIONS

- **2023**

  [1] Peter Mayer, Katharina Werner, <u>Mohammed Salah Al-Radhi</u>, Tamas Gabor Csapo, Bálint Czeba, Géza Nemeth, Ana Patrícia Rocha, Ilídio C. Oliveira, Samuel Silva, Melinda Szeker, António Teixeira, Paul Panek, *17th Annual Conference on Health Informatics meets Digital Health (dHealth)*, Vienna, Austria, 2023. DOI

  [2] Layan, <u>Mohammed Salah Al-Radhi</u>, Improving Naturalness of Neural-based TTS System Trained with Limited Data, *1st Workshop on Intelligent Infocommunication Networks, Systems and Services (WI2NS2)*, Budapest, Hungary, 2023. DOI

  [3] Ali Raheem Mandeel, Ammar Abdullah Aggar, <u>Mohammed Salah Al-Radhi</u>, Tamás Gábor Csapó, Implementing a Text-to-Speech synthesis model on a Raspberry Pi for Industrial Applications, *1st Workshop on Intelligent Infocommunication Networks, Systems and Services (WI2NS2)*, Budapest, Hungary, 2023. DOI

  [4] Mandeel, A.R., <u>Mohammed Salah Al-Radhi</u>, Csapó, T.G., Investigations on speaker adaptation using a continuous vocoder within recurrent neural network based text-to-speech synthesis. Multimedia Tools and Applications, 82, 15635–15649 (2023). DOI

  [5] <u>Mohammed Salah Al-Radhi</u>, Tamás Gábor Csapó, Géza Németh: Improving the expressiveness of TTS synthesis with non-autoregressive neural vocoding, Beszédkutatás–Speech Research, 2023. DOI

  [6] Ali Raheem Mandeel, Mohammed Salah Al-Radhi, Tamás Gábor Csapó: Creaky Voice via Speaker Adaptation within End-to-End Text to Speech Synthesis, Beszédkutatás–Speech Research, 2023. DOI

  [7] Layan Sawalha, Mohammed Salah Al-Radhi: Few-Shot Multi-Language Text-to-Speech Synthesis with State-of-the-Art Neural Networks, Beszédkutatás–Speech Research, 2023. DOI

- **2022**

  [8] <u>Mohammed Salah Al-Radhi</u>, T. G. Csanó, C. Zainkó and G. Németh, Towards Parametric Speech Synthesis Using Gaussian-Markov Model of Spectral Envelope and Wavelet-Based Decomposition of F0, *30th European Signal Processing Conference (EUSIPCO)*, Belgrade, Serbia, 2022, pp. 1150–1154. DOI

[9] Ismaeil R. Alnaab, Harwan M. Taha, Zainab A. Abdulwahab, <u>Mohammed Salah Al-Radhi</u>, Performance comparison between fixed tilt angle and solar tracking systems at Basra governorate: A case study, *Indonesian Journal of Electrical Engineering and Computer Science*, 26(1):184–193, 2022. DOI

[10] Ali Raheem Mandeel, <u>Mohammed Salah Al-Radhi</u>, and Tamás Gábor Csapó, Speaker Adaptation Experiments with Limited Data for End-to-End Text-To-Speech Synthesis using Tacotron2, *Infocommunications Journal*, XIV, 3, pp. 55–62, 2022. DOI

- **2021**

[11] Mohammed Salah Al-Radhi, Csapó, T.G., Zainkó, C., Németh, G., Continuous Wavelet Vocoder-Based Decomposition of Parametric Speech Waveform Synthesis. In Proc. Interspeech, Brno, Czechia, pp. 2212–2216, 2021. DOI

[12] <u>Mohammed Salah Al-Radhi</u>, Tamás Gábor Csapó, and Géza Németh, Effects of Sinusoidal Model on Non-Parallel Voice Conversion with Adversarial Learning, *Applied Sciences*, 11, 7489, pp. 1–16, 2021. DOI

[13] <u>Mohammed Salah Al-Radhi</u>, Csapó, T.G. & Németh, G. Noise and acoustic modeling with waveform generator in text-to-speech and neutral speech conversion. Multimedia Tools and Applications, 80, 1969–1994, 2021. DOI

[14] Mandeel, A.R., <u>Mohammed Salah Al-Radhi</u>, Csapó, T.G., Speaker Adaptation with Continuous Vocoder-Based DNN-TTS. *In: Speech and Computer. SPECOM, Lecture Notes in Computer Science*, 12997. Springer, 2021. DOI

[15] P. Dai, <u>Mohammed Salah Al-Radhi</u>, T. G. Csapó, Effects of F0 Estimation Algorithms on Ultrasound-Based Silent Speech Interfaces, *International Conference on Speech Technology and Human-Computer Dialogue (SpeD)*, Bucharest, Romania, pp. 47–51, 2021. DOI

[16] <u>Mohammed Salah Al-Radhi</u>, Tamás Gábor Csapó, Géza Németh, Advances in speech vocoding for text-to-speech with continuous parameters, *2nd International Conference on Artificial Intelligence and Speech Technology (AIST-2020), Artificial Intelligence and Speech Technology*, 2021. DOI

[17] Safa Jameel Dawood Al-Kamil, <u>Mohammed Salah Al-RadhiU</u>, Deep Learning for Self-Driving Vehicles, *Proceedings of 2nd International Multi-Disciplinary Conference Theme: Integrated Sciences and Technologies (IMDC-IST)*, Sakarya, Turkey, 2021. DOI

- **2020**

[18] <u>Mohammed Salah Al-Radhi</u>, High-Quality Vocoding Design with Signal Processing for Speech Synthesis and Voice Conversion, *PhD Dissertation*, Budapest University of Technology and Economics, 2020. DOI

[19] <u>Mohammed Salah Al-Radhi</u>, Omnia Abdo, Tamás Gábor Csapó, Sherif Abdou, Géza Németh, Mervat Fashal, A continuous vocoder for statistical parametric speech synthesis and its evaluation using an audio-visual phonetically annotated Arabic corpus, *Computer Speech & Language*, Volume 60, 2020. DOI

[20] <u>Mohammed Salah Al-Radhi</u>, Tamás Gábor Csapó, Géza Németh, Continuous Noise Masking Based Vocoder for Statistical Parametric Speech Synthesis, *IEICE Transactions on Information and Systems*, E103.D, Issue 5, pp. 1099–1107, 2020. <u>DOI</u>

[21] <u>Mohammed Salah Al-Radhi</u>, Tamás Gábor Csapó, Géza Németh, conTTS: Text-to-Speech Application using a Continuous Vocoder, *12th International Seminar on Speech Production (ISSP)*, 2020. DOI

[22] Mohammed Salah Al-Radhi, Tamás Gábor Csapó, Géza Németh, Non-Parallel Voice Conversion Incorporating Sinusoidal Model with Adversarial Learning, Beszédkutatás– Speech Research, 2020. DOI

- **2019**

[23] Mohammed Salah Al-Radhi, Csapó, T.G. & Németh, G., Continuous vocoder applied in deep neural network based voice conversion. *Multimedia Tools and Applications*, 78, 33549–33572, 2019. DOI

[24] Mohammed Salah Al-Radhi, T. G. Csapó, G. Németh, Parallel Voice Conversion Based on a Continuous Sinusoidal Model, *2019 International Conference on Speech Technology and Human-Computer Dialogue (SpeD)*, Timisoara, Romania, 2019, pp. 1-6. DOI

[25] Tamás Gábor Csapó, Mohammed Salah Al-Radhi, Géza Németh, Gábor Gosztolya, Tamás Grósz, László Tóth, Alexandra Markó, Ultrasound-Based Silent Speech Interface Built on a Continuous Vocoder, *In Proceedings of Interspeech*, Graz, Austria, 2019. DOI

[26] Hameed, Waleed I., Baha A. Sawadi, Safa J. Al-Kamil, Mohammed Salah Al-Radhi, Yasir I. A. Al-Yasir, Ameer L. Saleh, and Raed A. Abd-Alhameed, Prediction of Solar Irradiance Based on Artificial Neural Networks, *Inventions*, 4, 3: 45, 2019. DOI

[27] Mohammed Salah Al-Radhi, Tamás Gábor Csapó, Géza Németh, Adaptive Refinements of Pitch Tracking and HNR Estimation within a Vocoder for Statistical Parametric Speech Synthesis, *Applied Sciences*, 9 (12), 2460, 2019. DOI

[28] Mohammed Salah Al-Radhi, T. Gábor Csapó and G. Németh, RNN-based speech synthesis using a continuous sinusoidal model, *International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, pp. 1-8, 2019. DOI

[29] Mohammed Salah Al-Radhi, Tamás Gábor Csapó, Géza Németh, High quality continuous vocoder in deep recurrent neural network based speech synthesis, *in Eastern European Machine Learning*, *Google DeepMind*, Bucharest, Romania, 2019. [poster]

[30] Mohammed Salah Al-Radhi, High-quality vocoding for speech synthesis and voice conversion, International Joint Conference on Neural Networks (IJCNN), Budapest, Hungary, 2019.

- **2018**

[31] Mohammed Salah Al-Radhi, Tamás Gábor Csapó, Géza Németh, A Continuous Vocoder using Sinusoidal Model for Statistical Parametric Speech Synthesis, *SPECOM, Lecture Notes in Computer Science*, Leipzig, Germany, pp 11-20, 2018. DOI

[32] Mohammed Salah Al-Radhi, Tamás Gábor Csapó, Géza Németh, Improving continuous F0 estimator with adaptive time-warping for high-quality speech synthesis, *in Beszédkutatás (conference of the speech reseacrch)*, Budapest, Hungary, 2018. DIO

- **2017**

[33] Mohammed Salah Al-Radhi, Csapó T.G., Németh G., Time-Domain Envelope Modulating the Noise Component of Excitation in a Continuous Residual-Based

Vocoder for Statistical Parametric Speech Synthesis. In Proc. Interspeech, pp. 434-438, 2017. DOI

[34] Mohammed Salah Al-Radhi, Tamás Gábor Csapó, Géza Németh, Continuous vocoder in feed-forward deep neural network based speech synthesis, *International conference of digital speech and image processing*, pp. 1-4, Novi Sad, Serbia, 2017. DOI

[35] Mohammed Salah Al-Radhi, Tamás Gábor Csapó, Géza Németh, Effects of adding a Harmonic-to-Noise Ratio parameter to a continuous vocoder, in Proceedings of the 6th of the UK Speech, Cambridge University, England, 2017. DOI

[36] Mohammed Salah Al-Radhi, Csapó T.G., Németh G., Deep Recurrent Neural Networks in Speech Synthesis Using a Continuous Vocoder. *In: Karpov, A., Potapova, R., Mporas, I. (eds) Speech and Computer. SPECOM. Lecture Notes in Computer Science*, vol 10458. DOI

[37] Mohammed Salah Al-Radhi, High quality continuous residual-based vocoder for statistical parametric speech synthesis, 3rd Doctoral Consortium, *International Speech Communication Association (ISCA-SAC), Interspeech*, KTH Royal Institute of Technology, Stockholm, Sweeden, 2017. DOI

- **2013**

[38] Mohammed Salah Al-Radhi, Design of Finite Impulse Response Digital Filters using Optimal Methods, *MSc Dissertation*, Portsmouth University, 2013. DOI