SHRUTI RAJENDRA KSHIRSAGAR

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RESEARCH INTEREST

Deep Learning, Machine Learning, Speech Signal Processing, Affective computing, Artificial Intelligence, Sound Recognition

EDUCATION

Institut national de la recherche scientifique, Montreal | PhD Telecommunications Jan 2018 - Present
· *Specialization: Audio Speech Processing & Deep Learning | Advisor: Dr. Tiago H. Falk | GPA 4.0/4.3*

University of Mumbai, Mumbai | ME Electronics & Telecommunication Engineering Aug 2014 - Juy 2016
· *Specialization: Signal Processing | Advisor: Dr. Preeti Rao | GPA 9.08/10*

University of Mumbai, Mumbai | BE Electronics & Telecommunication Engineering Aug 2010 - May 2014
· *Percentage: 72.64 (First Class with Distinction)*

EXPERIENCE

Machine Learning for Audio Analytics Intern | Robert Bosch Inc, Mississauga Jun 2021 - Oct 2021
· Investigated non-negative matrix-based features for overlapping audio event detection tasks
· Explored deep learning transformer based models for audio event detection tasks
· Investigated various signal processing-based features with the recent state-of-the-art deep learning models

Research and development Intern | Lisnen Canada, Toronto Aug 2020 - Dec 2020
· Worked on data preparation and feature analysis for sound recognition
· Worked on developing a mobile based hearing assistive application to provide situation awareness
· Worked on developing a deep learning and machine learning based model and proposed environmental robust features and algorithms for acoustic event detection tasks

MITACS Accelerate Research Intern | Thales Canada, Quebec City May 2018 - Sep 2018
· Supervisor: Dr. Daniel Lafond
· Multi-modal speech emotional (stress) recognition using LSTM
· Stress detection from speech signals
· Investigated the effects of different noise types and noise levels on the speech data
· Employed domain adaptation for cross-language emotion detection

Research Assistant | Nanyang Technological University, Singapore May 2017 - Aug 2017
· Supervisor: Prof. Chng Eng Siong
· Worked on analysis of prosodic patterns for speech emotion recognition
· Analyzed pitch patterns for the different emotions
· Conducted experiments to investigate novel features for speech emotion recognition using DNN

Masters Dissertation Thesis | Indian Institute of Technology Bombay Aug 2015 - Jun 2016
· Supervisor: Prof. Preeti Rao
· Studied the pitch, intensity and duration of utterances using techniques such as one-way ANOVA
· Identified the acoustic correlates of stress in Marathi language using MATLAB and PRAAT
· Modeled these acoustic features in different lexical stress locations and focus types

Summer Intern | Doordarshan Kendra (National Television Channel, India) July 2013
· Field study of signal processing equipment used in broadcasting
· Understood and visualized the signals at each stage of transmission

TECHNICAL SKILLS

Python, TensorFlow, PyTorch, Scikit-learn. Praat, MATLAB, Linux
Relevant courses: Applied ML (McGill), Deep Learning (UdeM), Speech Communications, Speech Signal Processing

HONORS, AWARDS & ORGANIZATIONS

Awards: MuSAE Lab Grant, Jan 2018 - Dec 2021 | INRS International Student Scholarship, Jan 2018 - Dec 2021 | MITACS Accelerate Internship Grant, Aug 2020 - Apr 2021 | MITACS Accelerate Internship Grant, Summer 2018 | IIIT Hyderabad Language Technologies Research Center Lab Grant, Jan 2017 - Dec 2017 | NTU Singapore 'Tamasek Lab Research Grant' for International Internship, Summer 2017 | IIT Bombay Digital Audio and Processing Lab Grant, Apr 2016 - June 2016 | Graduate Aptitude Test in Engineering (GATE) Scholarship for Masters, Aug 2014 - Jul 2016

Organizations: Association for the Advancement of Affective Computing, IEEE Signal Processing Society, IEEE Women in Engineering, Women in Machine Learning

PUBLICATIONS & PRESENTATIONS

C1 Avila, S. Kshirsagar, A. Tiwari, D. Lafond, D. O'Shaughnessy, and T. Falk, " Speech-based stress and emotion classification based on modulation spectral features and convolution neural networks ", EUSIPCO 2019, Spain

C2 Gaballah, Amr, Anderson Avila, Joao Monteiro, Parth Tiwari, Shruti Kshirsagar, and Tiago H. Falk. "Development of the INRS-EMT Scene Classification Systems for the 2020" DCASE challenge 2020

C3 Tiwari, P., Jain, Y., Avila, A., Monteiro, J., Kshirsagar, S., Gaballah, A., Falk, T. H. Modulation Spectral Signal Representation and I-vectors for Anomalous Sound Detection, DCASE challenge 2020

C4 S. Barhate, S. Kshirsagar, N. Sanghvi, K. Sabu, P. Rao and N. Bondale " Prosodic Features of Marathi News Reading Style ", Proc. of IEEE TENCON, Nov 2016, Singapore

C5 P. Rao, H. Mixdorff, I. Deshpande, N. Sanghvi and S. Kshirsagar " A Quantitative Study of Focus Shift in Marathi ", Proc. of Speech Prosody, May 2016, Boston, U.S.A.

J1 S. Kshirsagar, T. Falk, "Quality-Aware Bag of Modulation Spectrum Features for Robust Speech Emotion Recognition" , submitted IEEE transaction on affective computing, Sep 2021

J2 T. Falk, A. Tiwari, R. Casani, S.Kshirsagar, D. Tobon, Y. Sue, "Modulation Spectral Signal Representation for Quality Measurement and Enhancement of Wearable Device Data: An Overview" , submitted to Frontiers in Electronics, section Wearable Electronics, September 2021

J3 Y. Zhu, A. Tiwari, J. Monteiro, S. Kshirsagar, T. Falk, "COVID-19 Detection via Fusion of ModulationSpectrum and Linear Prediction Speech Features ", submitted to IEEE trans on audio, speech, and language processing., September 2021

P1 Poster presentation on " Prosodic Features of Marathi News Reading style" at TENCON- International Technical Conference of IEEE Region 10 (2016), Singapore

P2 Poster presentation on "Multimodal emotion recogntion "in the wild" at STARaCOM- Industrial meetup (2019), Montreal, Canada

P3 Poster presentation on "Exploring Domain Adaptation for Monolingual and Cross-lingual Speech Emotion Recognition"- at ACM Canadian Celebration of women in computing conference (2019), Toronto, Canada

T1 S. Kshirsagar, B. Markarkandi, P. Rao, "Determination Of Acoustic Parameters Of Marathi Prosody ", June 2016