Mihir Parmar

Contact Information

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Area of Interests

Natural Language Processing, Machine/Deep Learning, BioInformatics, and Speech Processing

Education

Arizona State University, Tempe, USA — August 2021 - Present
Doctor of Philosophy in Computer Science (Ph.D.) (GPA - 3.90/4.00)

Arizona State University, Tempe, USA — August 2019 - 2021
Master of Science in Computer Science (MSCS) (GPA - 3.88/4.00)
Thesis Title - *Automation of Title and Abstract Screening for Clinical Systematic Reviews*

Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT)
Gandhinagar, Gujarat, India. — August 2015 - May 2019
Bachelor of Technology (B.Tech) in ICT (GPA - 8.03/10.00)

Work Experience

Arizona State University, Tempe, USA
Research Assistant — **Jan 2020 - present**
My major research area is NLP applications in biomedical domain. Currently, I am working on prompt/instruction-based unified system for biomedical tasks. Along with that, I am developing accurate NLP classifiers for the Mayo Clinic to automate their systematic review process. Expertise in implementing various language models for different NLP applications.

Speech Research Lab, DA-IICT, India
Researcher — **Jan 2018 - June 2019**
I have worked on the various state-of-the-art mapping functions using Machine Learning and Deep Learning architectures. Explored two major fields - Speech Pathology and Voice Conversion. Expertise in implementing various Deep Learning architectures and mainly in Generative Adversarial Network (GAN)-based algorithms.

Technical Skills

Software & Tools: Various NLP Tools such as NLTK, spaCy; Linux; Google Colab; Anaconda.
Language & Libraries: Pytorch; Python; Shell Script; LaTeX; TensorFlow; C++.

Selected Publications

Mihir Parmar, Man Luo, Irbaz B. Riaz, Rabbia Siddiqi, M. Hassan Murad, Murthy Devarakonda, and Chitta Baral, "Abstract Screening for Clinical Systematic Reviews as Question Answering", in EMNLP 2021, submitted but not presented.

Mihir Parmar, Ashwin Karthik Ambalavanan, Hong Guan, Rishab Banerjee, Jitesh Pabla and Murthy Devarakonda, "COVID-19: Comparative Analysis of Methods for Identifying Articles Related to Therapeutics and Vaccines without Using Labeled Data", arXiv preprint arXiv:2101.02017 (2021). (**pdf**)

Mirali Purohit, **Mihir Parmar**, Maitreya Patel, Harshit Malaviya, and Hemant A. Patil, "Weak Speech Supervision: A Case Study of Dysarthria Severity Classification", accepted in **EUSIPCO** 2020, The Netherlands.

Mihir Parmar, Savan Doshi, Nirmesh Shah, Maitreya Patel and Hemant A. Patil, "Effectiveness of Cross-Domain Architectures in Whispered-to-Normal Speech Conversion", accepted in **EUSIPCO**-2019, Spain. (**pdf**)

Maitreya Patel, **Mihir Parmar**, Savan Doshi, Nirmesh Shah, and Hemant A. Patil, "Adaptive Generative Adversarial Network for Voice Conversion", accepted in **APSIPA**-2019, Lanzhou, China. (**pdf**)

Nirmesh J. Shah, **Mihir Parmar**, Neil shah, and Hemant A. Patil, "Novel MMSE DiscoGAN for Cross-Domain Whisper-to-Speech Conversion", in **Machine Learning in Speech and Language Processing (MLSLP)**, Google Office, Hyderabad, India, September 7, 2018. (**pdf**)

Journal

Mihir Parmar, Irbaz B. Riaz, Rabbia Siddiqi, M. Hassan Murad, Chitta Baral, and Murthy Devarakonda, "Empirical Study of High-Recall NLP Methods for Screening Articles", submitted to Journal of Biomedical Informatics (JBI).

Siddhant Gupta, Ankur Patil, Mirali Purohit, **Mihir Parmar**, Maitreya Patel, Hemant A. Patil, and Rodrigo Capobianco Guido, "Residual Neural Network Precisely Quantifies Dysarthria Severity-Level Based on Short-Duration Speech Segments", accepted in the Neural Network journal, Elsevier 2020.

Maitreya Patel, **Mihir Parmar**, Mirali Purohit, Nirmesh Shah, and Hemant A. Patil, "AdaGAN: Novel Adaptive GAN for zero-shot many-to-many Voice Conversion", under revision for IEEE/ACM transactions on Audio Speech and Language Processing.

Relevant Academic Projects

Semantic Information Availability for Information Retrieval **Fall 2020**

This project introduces the new concept of a scale *Semantic Information Availability* which determines how well a sentence contains the information that someone asking the question is looking for. BERT-based models are used to achieve this task.

Evolutionary Generative Models for Whisper-to-Speech Conversion **Spring 2020**

This project presents a significant extension of GAN-based model in the framework of Evolutionary Genetic Algorithm for the cross-domain whisper-to-speech conversion task.

Weak Social Supervision: Fake News Detection **Fall 2019**

This project presents Weak Social Supervision, a first-of-its-kind system that helps users to train state-of-the-art classifiers with limited or even with-out hand-labeling training data in social media for fake news detection.

Semantic Textual Similarity between two sentences with clinical text **Fall 2019**

Proposed three different embedding-based methods and adversarial training-based method for fine-tuning BERT models, and presented the case study on BioBERT, ClinicalBERT, and NcbiBERT.

Effectiveness of Generative Adversarial Networks (GANs) in Medical Domain **Fall, 2018**

Proposed novel MMSE DiscoGAN (Deep Learning Architecture) for Non Audible Murmur(NAM)-to-Whisper, and Whisper-to-Speech Conversion.

Relevant Coursework

Linear Algebra, Probability and Statistics, Calculus and Complex Variables, Data Structures and Algorithms, Statistical Machine Learning, Natural Language Processing, Data Mining, Social Media Mining, Speech Technology, Signals and Systems, Quantum computation, Natural Computing, Coding theory.

Conference and Workshop Attended

- Conference on Empirical Methods in Natural Language Processing (EMNLP) during November 16-20, 2020.
- Summer School on Speech Signal Processing (S4P) on "Speaker Recognition and Diarization", at **DA-IICT**, India during July 6-10, 2019.
- Machine Learning in Speech and Language Processing (MLSLP), satellite event of INTERSPEECH 2018, **Google Office**, Hyderabad, September 7, 2018.
- 14^{th} Annual ADMA Conference and Graph Theory Day, at **DA-IICT**, India during June 6-10, 2018.

Community Services

- Editor and Writer at ML Brew publication on Medium (**publication link**)
- Active ACL student member
- Keynote Speaker at PyData Gandhinagar (2019), India.
- Volunteer at ISCA supported Summer School on Speech Signal Processing (S4P), satellite event of INTERSPEECH 2018, at DA-IICT during september 9-11, 2018.