Tushar Dhyani

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Professional Experience

Sony *Stuttgart, BW, Deutschland*
MASTER THESIS STUDENT - AI, SOUND AND SPEECH RESEARCH LAB *June. 2021 - Dec. 2023 (6 Months)*
- Worked on speech restoration using diffusion-based generative AI techniques.

WERKSTUDENT - AI, SOUND AND SPEECH RESEARCH LAB *Nov. 2021 - May. 2023 (18 Months)*
- Worked on audio inverse problems, especially related to robust source separation.
- Responsible for maintenance of source separation framework components.
- Responsible for maintaining an internal audio augmentation framework.

Hessian.ai *Darmstadt, Hesse, Deutschland*
WERKSTUDENT *August. 2021 - Oct 2021 (3 Months)*
- Developed *topic modeling* and *topic segmentation* framework for European Federal Election 2021.
- Designed infrastructure for managing, processing, and retrieving data from various news & media publications houses.

Genietalk *Mumbai, Maharashtra, India*
JUNIOR DATA SCIENTIST *March. 2019 - March. 2021 (2 Years)*
- Responsible for conversational turn-taking agents.
- Integrated mechanism for code-mixed input for low-resource Indian languages - Hindi, Gujarati, and Marathi.
- Integrated question answering mechanism (machine comprehension) using *BiDirectional Attention Flow*.

DATA SCIENCE INTERN *July. 2018 - Oct. 2018 (3 months)*
- Built a language identification tool for English and English-typed (code-mixed) language used in text-based conversations.

Education

Universität Stuttgart *Stuttgart, BW, Deutschland*
MASTER OF SCIENCE IN COMPUTATIONAL LINGUISTICS *Apr. 2021 - present*
- **Coursework**: *Core Linguistics* - Advance Machine Learning, Deep learning for speech and language processing, Cognitive Computing, Syntactic Parsing, Machine Translation, Machine Learning, Ethics in NLP.

Madhav Institute of Technology & Science *Gwalior, Madhya Pradesh, India*
B.E. IN INFORMATION TECHNOLOGY (7.6/10 WITH *Hons.*) *June. 2014 - June. 2018*
- **Coursework**: Data Structures & Algorithms, Operating systems, Software Engineering, Object oriented programming, Information Theory, Database Management System, Data warehousing & Data Mining.

Projects

Master Thesis: Speech Restoration using generative models *Stuttgart, Germany*
GENERATIVE DIFFUSION MODELS FOR SPEECH ENHANCEMENT. *June 2023 - Dec. 2023*
- Guide: *Giorgio Fabbro, Florian Lux, Dr. Fritz Hohl, Prof. Dr. Thang Vu*.
- Created a novel method to restore speech recordings from degraded to high-fidelity studio quality recording using generative deep learning methods.

Diffusion Denoising of speech *Stuttgart, Germany*
GENERATIVE DIFFUSION MODELS FOR SPEECH ENHANCEMENT. *July 2022 - Dec. 2022*
- Guide: *Florian Lux, Prof. Dr. Thang Vu*.
- Introduced novel method using generative diffusion technique for speech denoising/enhancement. [Webpage] [Report], [Poster], [Code],

Emotion Stimuli *Stuttgart, Germany*
EMOTION ROLE LABELING MADE EASY WITH HMM AND TRANSFORMERS. *July 2021*
- Guide: *Dr. Roman Klinger*.
- Deep learning and HMM based approach for fine-grained emotion role labeling. Click to view [Webpage] [Report], [Code]

Audiomentation *Stuttgart, Germany*
AUDIO AUGMENTATION LIBRARY. -
- Contributions of open-source audio augmentation library. View [Code]

Evincing disparity in the ethical evaluation of Generative agents *Stuttgart, Germany*
EVALUATION OF NATURAL LANGUAGE GENERATIVE CONVERSATIONAL AGENT *July 2021-Sept 2021*
- Reported a study on evaluation of generative models based on checklist mechanism. Click to view [Report]

Bengali Grapheme detection *Mumbai, Maharashtra, India*
ALPHA-SYLLABARY LANGUAGE GRAPHEME DETECTION *Jan 2020-Mar 2020*
- Handwritten Bengali grapheme detection and separation of constituents of images into: grapheme root, vowel diacritics, and consonant diacritics for optimizing Bengali OCR. [Webpage]

Skills

Frameworks: | PyTorch | PyTorch-lightning | Tensorflow | Scikit-learn | Hydra | Pandas | Numpy | Matplotlib | NLTK |

Tools: | Slurm | Docker | Latex | Kubernetes | Elasticsearch | MongoDB | Git | GitHub-Actions | Flask |

Languages: | Python | shell | c++ |

Achievements

Mar-2020 **Kaggle-Bengali.ai Grapheme detection**, Secured 55th rank (top 2%) and Silver medal on Kaggle *India*

Oct-2019 **Kaggle Expert**, Expert in 2 categories - Discussion and Kernel. *India*

Mar-2017 **Google CodeJAM-Qualification round, Facebook-Hackercup Qualifier**, *Gwalior*

Dec-2015 **ACM ICPC-Kharagpur Regionals**, Member of team *CPP Killers* which ranked 42 (out of 76). *IIT-Kharagpur*