PRIYANSHI PAL

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EDUCATION

Aalto University, Finland 2023 (Ongoing)
Master of Science in Computer, Communication and Information Sciences
Major: Speech and Language Technologies

Ramaiah Institute of Technology (MSRIT), Bengaluru 2015-2019
Bachelor of Engineering (B.E) in Electronics and Instrumentation - 7.3/10.0 CGPA

RESEARCH EXPERIENCE

Research Assistant Aug 2020 - May 2023
Signal Processing Interpretation and Representation (SPIRE) Lab, *Bengaluru*
Electrical Engineering Department, Indian Institute of Science (IISc)
Supervisors: Prof. Prasanta Kumar Ghosh (IISc), Prof. Chiranjeevi Yarra (IIIT Hyderabad)

- VoisTutor 2.0: Explored the role of segmental and suprasegmental features (7 features such as Phoneme mispronunciation, mother tongue influence, intonation, stress and more) in perceived overall pronunciation quality ratings through analysis on ∼30K phonetic transcriptions of Indian English(IE).
- Characterisation of pronunciation variabilities of IE: Identified phonological features of IE, considering ∼20 Indian native language varieties with 80 speakers, by performing a data-driven analysis on their IE phonetic transcriptions. Achieved a decrease of 22% PER (Phoneme Error Rate) in G2P (Grapheme to Phoneme) system performance by modifying a high-resource native English lexicon through found phonological features.
- English Gyani: Working on the development of an application for language learning and assessment, aimed to teach English grammar and pronunciation to Indian learners, funded by IMPRINT and Department of Science & Technology (DST), Govt. of India. I work on streamlining the input pipeline for application database, managing teams to gather English content and pronunciation ratings, and developing assessment strategies of annotation agreement using statistical measures.
- Outreach efforts: Co-organised a course on "Engineering in Speech Science: Behavioral Machine Intelligence and applications" during 14th-18th December 2020, for ∼130 students under Scheme of Promotion and Academic Research Collaboration (SPARC), Ministry of Human Resource and Development (MHRD), Govt. of India.

PUBLICATIONS

- Shelly Jain, Priyanshi Pal, Anil Valuppa, Chiranjeevi Yarra and Prasanta Kumar Ghosh, "An Investigation of Indian Native Language Phonemic Influences on L2 English Pronunciations", accepted in Interspeech 2023. [Arxiv Pre-print].
- Priyanshi Pal, Chiranjeevi Yarra, Prasanta Kumar Ghosh,"Voistutor 2.0: A Speech Corpus with Phonetic Transcription for Pronunciation Evaluation of Indian L2 English Learners," 25th Conference of the Oriental COCOSDA International Committee for the Co-ordination and Standardisation of Speech Databases and Assessment Techniques (O-COCOSDA), 2022. [link]
- Priyanshi Pal, Shelly Jain, Anil Valuppa, Chiranjeevi Yarra and Prasanta Kumar Ghosh, "Study of Indian English Pronunciation Variabilities relative to Received Pronunciation." [Arxiv Pre-print] (2022).

WORK EXPERIENCE

Junior Embedded Electronics Engineer Aug 2019 - Aug 2020
MIMYK, Indian Institute of Science *Bengaluru*

- Led the electronics development of Electromechanical Control Handle (ECH) as an endoscope emulator for VR-based medical simulations of endoscopy. Aimed to train doctors without having to experiment on a patient.

- Developed ARM M4 Cortex-based USB-programmable PCB for ECH microcontroller, supports fast communication, designed for critical size contrainsts to fit inside ECH.

Quality Assurance Engineering Intern Mar 2019 - May 2019
Amagi Media Labs *Bengaluru*

- Tested and reported bugs for various applications such as video streaming for OTT platform.

SKILLS

Languages: Python, C++ ; **Softwares & Tools:** MATLAB, LaTeX, TensorFlow, OpenCV, Autodesk Eagle

RELEVANT ONLINE COURSES

- (ML0101EN) Machine Learning with Python: A Practical Introduction, IBM (Certificate)
- Neural Networks and Deep Learning, DeepLearning.AI (Certificate)
- Improving Deep Neural Networks, DeepLearning.AI (Certificate)

UNDERGRADUATE PROJECTS

Ambient Intelligence: Smart Mirror 2019

- Built an interactive two-way mirror that displays user-personalized information (via external APIs), responds to voice-based queries (using Google Assistant API), and unlocks only upon user face recognition (Implemented Local Binary Pattern using Open CV on Raspberry Pi 3b). The display and lighting around the mirror switch to active mode when detecting presence nearby using a PIR sensor (with sensitivity up to 10m), minimizing power consumption in standby mode.

Design and Implementation of Smart Safety Helmet for Coal Miners 2018

- Built a Safety Helmet prototype for coal miners that alerts miners and the control room prior to events such as methane gas explosions and roof collapses, using a sensor network of a gas (MQ2), pressure (piezoelectric), and a humidity sensor (DHT11) to track mine environment changes, transmitting real-time sensor data to the control room using Zigbee protocol via Xbee s2c modules.

Independent Projects

- **Analysis of voltage signals of Vela Pulsar (PSR B0833-45)** [2019]: Investigated time-frequency domain properties of voltage signal of Pulsar from Ooty radio telescope. The spectrogram indicated effects of signal dispersion on the periodicity of pulsar, and the power spectrum showed interference of local radio frequencies.
- **Puck-pushing Robot** [2018]: Won third position at "UPAKARAN '18" robotics competition for a miniature 4-wheeler (ATmega328 microcontroller based) robot to score goal against other robots by pushing a "puck" into a goal, controlled by Bluetooth module (HC-05) and driven by 100rpm motors through L298D motor driver.
- **Maze solving robot** [2018]: Based on the Lee algorithm, the 4-wheeler robot senses path using IR sensors and finds the shortest path in a maze, presented at IEEE mini project exhibition at MSRIT, 2018.

EXTRA-CURRICULAR ACTIVITIES

- Presented an interactive project to control air flow beneath a ping pong ball using speech rate and intensity of sound, at Open day IISc, 2023.
- Actively published poems in Annual Student College magazine "Sudarshan - 2019" at MSRIT.
- Volunteered for Cancer Awareness program organised by Times of India in 2018, at MSRIT.
- Marketing team member at the Annual Cultural Festival, "Udbhav' 17" at MSRIT.