

SPS SigMA Participants & Projects

2026-2027		
Mentee	Mentor	Topic of the Project
Ariana Pereira	Iran Roman	Enhancing Computational Modeling of Musical Surprisal through Neural Resonance Theory
Ashley Estefania Bravo Bravo	Monorama Swain	Evaluating and Mitigating Socioeconomic Bias in Automatic Speech Recognition Systems
Augustine Wisely Bezalel A	Deepak Mishra	Neurological Gait Disorder Classification Using Wi-Fi Sensing
Cecilia Bolaños	Magdalena Fuentes	Explaining Audio Models through Listenable and Captioned Explanations
Deeksha Gupta	Peter Peer	Visual and Textual Explainable AI for Facial Biometric Signal Processing using Multimodal Deep Learning and Language Generation
Fernando Garcia de la Cruz	Ryan M. Corey	Controllable Audio Generation via Open Diffusion Models and Multimodal Time-Varying Signals
Hao Zhu	Linlong Wu	Waveform Design for Radar Systems Empowered by Space Time-Coding (STC) Metasurfaces
Nicolas Vasconcellos	Eduardo Antônio Barros da Silva	Compressed-Domain Data Augmentation
Rohan Thapa	Shekhar Nayak	Cross-Lingual Analysis and Modelling of Dysarthric Speech for ASR framework
Shubhajit Roy	Dhananjay Bhaskar	Topological Signal Processing over Simplicial Complexes for Modeling Higher-Order Interactions in Brain Activity

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2025-2026		
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Adesina Lekan Samuel	Daniele Giacobello	Probabilistic Speech Reconstruction and Dereverberation in Stationary and Non-stationary Reverberant Environments
Ameyaltzin Castillo Almazán	Irán Román	Biological Time-Series Processing for Recurrent Neural Network enhancement
Caleb Williams	Tirza Routtenberg	Graph Learning for Signal Processing Over Networks
Cuong Pham	Melanie Jouaiti	Multimodal Data Modeling Framework for Early Depression Detection
Dhivya. S.D.	Pratheepan Yogarajah	Enhancing Brain Tumor and Breast Cancer Screening Accuracy and Early Detection Through Advanced AI-Driven Diagnostics
Eliane Loza	Vijay Jeyakumar	AI based Non-Contact Vital Monitoring for improved Tele-Consultation
Jasmer Singh Sanjotra	Shekhar Nayak	Low Latency TTS models for Indic Languages
Joselyn Romero	Jing Han	Deep Learning-Enhanced Fetal Phonocardiography Interpretation: A Robust System for Remote Monitoring in Resource-Limited Settings
Mariana Rodríguez Castañeda	Sneha Das	Relevance of X-vector Features for Emotion Recognition Tasks
Mozhde Firoozi Pouyani	Amirafshar Moshtaghpour	Development of Deep Learning Inpainting methods for Subsampled Scanning Transmission Electron Microscopy Images
Muftee Mysan	David Cortes	Converting Mono Signals into 3D Spatial Sound with Ambisonics for Improved Localization and Immersive Audio Experiences
Sanoj Kumar	Monorama Swain	Cross-Lingual Speech Emotion Recognition for Low-Resource Indian Languages Using Speech-to-Speech Translation and Adapter Fusion
Wiebke Middelberg	Ryan M. Corey	Explore ways to leverage delayed remote microphone data to enhance speech processing for hearing aids

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2023-2024		
Mentee	Mentor	Topic of the Project
Devraj Raghuvanshi	Shekhar Nayak	Deep Attention-based Architectures for Multimodal Sarcasm Detection
Emiliano Acevedo Piotti	Dr. Magdalena Fuentes	Adapt prototypical models for sound classification to different domains and acoustic conditions by describing the conditions at deployment time
Guillermo Buendia Camacho	Désiré Sidibé	Next-Gen Agriculture: Few-Shot Learning for Strawberry Disease Detection
Hector Francisco Chahuara Silva	Gonzalo Mateos	Online Proximal-ADMM for Graph Learning from Streaming Smooth Signals
Hegel Emmanuel Pedroza Villalobos	Dr. Ryan Corey	Towards Realistic Electric Guitar Performance Generation. Presenting "REG": A Real Electric Guitar Dataset with Annotated Notes, Techniques, Chords, and Scales.
Hung Tien Tran	Dr. Sneha Das	Inclusive speech processing
Luis Fernando Torres	Li Cheng	Analyzing and Tracking Children's walk pattern using Artificial Intelligence
Mariia Shpir	Nadiya Shvai	Controllable image generation with the application to license plate recognition
Pedro Roberto Chumpitaz Flores	Domenico Ciuonzo	ANTISP: Advancing Network Traffic Classification through Statistical Signal Processing
Tharindu Wickremasinghe	Marco Duarte	Research the connections between NLM denoising and research the connections between NLS denoising and structured sparsity for compressive imaging
Wallace Costa de Abreu	Iran Roman	Detection and localization of a sound source relative to a listening device
Zhu Li	Dr. Nagendra Kumar	TTS for sarcasm

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2021-2022		
Mentee	Mentor	Topic of the Project
Julia Machnio	Saman Sargolzaei	Investigate the longitudinal impacts of Alzheimer's disease on structural and functional brain connectivity networks when probed by Blood Oxygenation Level Dependent (BOLD) functional Magnetic
Jialu Li	Shrikanth Narayanan	Building a Mandarin-English Code-Switching ASR for Understanding Language Acquisition in Bilingual Children
Atreyee Saha	Philip N. Garner	Develop a low-resource ASR model in the context of atypical speech.
Giovana Morais	Magdalena Fuentes	Design a self-supervised model for computational rhythm analysis, in particular beat and tempo estimation. We will build our model based on a state-of-the-art system, explore different self-supervised training strategies (pretext tasks) and contrast our model's performance with supervised alternatives.
Leya Barrientos	Daniele Giacobello	Improvement of Electromyographic (EMG) Biofeedback using Spatial Audio
Mistura Muibi-Tijani	Touqeer Ahmad	Resource Efficient Mountainous Skyline Detection using Deep and Shallow Learning
Nishanth Mudkey	Domenico Ciuonzo	RUNNER: RIS-assisted Decision Fusion in Sensor Networks
Sachini Chandanayake	Arvind Rao	Evaluate machine learning algorithms that can be used to predict the genetic status of tumors based on routine H&E images with the long-term goal of facilitating equitable access to molecular medicine practices regardless of geographic or financial constraints.
Shantosh Cumarasurier	Koutras Athanasios	Develop and test existing as well as new machine learning and deep learning techniques for recognizing different categories of inner spoken utterances by subjects.