
Departmental Seminar

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| Seminar Title | : Detection of Exercise-induced Physical Fatigue Using Speech: A Preliminary Study |
| Speaker | : Ms. Sakshi Gupta |
| Supervisor | : Prof. Anwesha Sengupta |
| Venue | : Seminar Room (EE-205) |
| Date and Time | : 02 Sep 2025 (5:00 PM) |
| Abstract | : Fatigue, characterized by significant physical or mental exhaustion resulting from stress, insufficient rest, or extended physical activity, can impair both cognitive functioning and physical capabilities. This condition increases the likelihood of accidents and detracts from overall well-being and performance. The present research investigates the potential of speech-based analysis as a non-invasive and objective method for detecting exercise-induced fatigue. As individuals become fatigued, notable variations in their speech patterns—such as changes in pitch, loudness, and spectral features—can be observed. In this study, voice recordings from 11 healthy individuals were analyzed during different stages of a controlled fatigue-inducing exercise routine. Mel-Frequency Cepstral Coefficients (MFCCs) were employed to extract meaningful audio features from the speech samples. The results revealed a strong correlation between participants' subjective fatigue ratings and the extracted speech features, demonstrating the viability of using vocal characteristics as indicators of fatigue. These findings pave the way for the development of real-time, voice-based monitoring systems that could enhance exercise planning and contribute to safety in environments where fatigue poses a significant risk. |