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Departmental Seminar

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| Seminar Title | : Analysis of Physical Fatigue Using Speech: A Preliminary Study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Speaker       | : Prof. Anwesha Sengupta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Supervisor    | : Prof. Anwesha Sengupta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Venue         | : Seminar Room (EE-205)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Date and Time | : 30 Jul 2025 (5:00PM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Abstract      | : Fatigue, a state of extreme tiredness or exhaustion caused by factors such as stress, lack of sleep, or prolonged exertion, adversely affects cognitive and physical performance, increasing the risk of accidents and reducing the quality of life. Fatigue impairs the alertness of an individual and his/her ability to perform tasks or handle critical responsibilities. This study explores speech analysis as a non-invasive, objective tool for monitoring exercise-induced fatigue. Speech exhibits fatigue-related changes in features such as pitch, intensity, and spectral characteristics. The present paper has analyzed the speech data of 11 healthy participants during progressive fatiguing exercise phases using Mel-Frequency Cepstral Coefficients (MFCCs). Subjective fatigue assessments are found to be strongly correlated with speech features, supporting the feasibility of using speech as a reliable indicator of fatigue. The findings highlight the potential for developing real-time speech-based fatigue monitoring systems to optimize exercise planning and improve safety in fatigue-critical tasks. |