

**SRM Institute of Science and Technology**  
**College of Engineering and Technology**  
**Department of ECE**  
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**EEG SIGNAL DENOISING AND ANALYSIS USING  
ADAPTIVE FILTERS**

**ABSTRACT**

EEG signals, capturing the brain's electrical activity, play a pivotal role in both neuroscience research and clinical diagnostics. These recordings offer valuable insights into brain function, enabling the study of various cognitive processes and aiding in the diagnosis and monitoring of neurological disorders. By detecting the synchronous activity of neurons through electrical impulses, EEG signals provide a window into the dynamic interplay of brain regions during tasks and conditions. However, EEG signals are often contaminated by noise, which can obscure meaningful brain activity patterns and compromise diagnostic accuracy. To address this challenge and enhance the reliability of EEG analysis, denoising techniques are employed. Among these techniques, the Least Mean Square (LMS) algorithm stands out as a widely used method for reducing noise. LMS algorithm is also employed in various applications in medical field such Foetal electrocardiogram (FECG) extraction[1] ,MRI and CT image enhancement, Speech enhancement.

Team Members Name and Registration Number

Signature

1. Swapnil Maiti
2. Deekshitha Adusumalli
3. Kunal Keshan
4. Sahil Sharma

Supervisor Name and Designation:

Signature: