* **A Wearable EEG Based Drowsiness Detection System with Blink Duration and Alpha Waves Analysis**

-V. Kartsch, S. Benatti, D. Rossi, L.Benini

Objective – Detecting drowsiness in 3 stages Blink Duration, Alpha Wave Burst and Alpha wave duration

Feature Extraction - Power Spectral Density Analysis, Fast Fourier Transform

Classification - Done in 3 stages to avoid computation expense in classification

Accuracy – 85%

* **A Motor Imagery using Wavelet Analysis and Spatial Pattern features extraction**

- Obed Carrera-León, Juan Manuel Ramirez, Vicente Alarcon-Aquino, Mary Baker,

David D´Croz-Baron, Pilar Gomez-Gil

Objective – Extracting Event Related Syncronization/Desynchronization

Feature Extraction - 1. Using Spatial Patterns obtained from Hilbert transform

2. Wavelet Analysis using Discrete Wavelet Transform

Classification – 1. LDA

2. QDA

3. SVM

Accuracy – 87.86% using LDA classifier and Discrete Wavelet Analysis feature extraction

* **A P300-based BCI Classification Algorithm using Median Filtering and Bayesian Feature Extraction**

-Xiao-ou Li , Feng Wang , Xun Chen , Rabab K. Ward

Objective – BCI Identification algorithm using P300

Feature Extraction – Median Filtering

Classification – Bayesian LDA

Accuracy – 90%

* **A Novel Effective Feature Selection Algorithm based on S-PCA and Wavelet Transform Features in EEG Signal Classification**

**-** Saadat Nasehi, Hossein Pourghassem

Objective – Study on effect of effective feature selection on classification accuracy

Feature Extraction – Discrete Wavelet Transform

Feature Selection – Statistical Principal Component Analysis

Classification – kNN classifier

Accuracy – 91% with 10 features from PCA and K=4

* **Developing a Logistic Regression Model with Cross Correlation for Motor Imagery Signal Recognition**

**-** Saadat Nasehi, Hossein Pourghassem

Objective – Motor Imagery task classification

Feature Extraction – Cross correlation between two signals

Classification – Logistic Regression

Accuracy – 90.29

* **P300 Event Detection using Feature Extraction Technique in FPGA**

**-** Saadat Nasehi, Hossein Pourghassem

Objective – Using Field Programmable Gate Arrays to store EEG signals to improve computation

Feature Extraction – FIR/Hanning filter, Self organised Fuzzy Neural Network

Classification – Fisher’s Linear Discriminator

Accuracy – 90% with FIR filter

* **A Feature Extraction Technique of EEG based on EMD-BP for motor imagery classification**

**-**Dalila Trad, Tarik Al-ani, Mohamed Jemni

Objective – A nonlinear approach for feature extraction of EEG signals for MI task classification

Feature Extraction – Empirical Mode Decomposition to decompose the signals into stationary signals followed by using band power of those signals to characterize sensorimotor rhythms

Classification – Hidden Markov Models

Accuracy – (Kappa Coefficient) 0.54

* **EEG Filtering based on BSS Algorithm and Its Modification for BCI**

**-**Dalila Trad, Tarik Al-ani, Mohamed Jemni

Objective – A nonlinear approach for feature extraction of EEG signals for MI task classification

Feature Extraction – Blind Source Separation

Classification – LDA

Accuracy – almost 100%

* **Time-Frequency Analysis of EEG Asymmetry Using Bivariate Empirical Mode Decomposition**

**-**Dalila Trad, Tarik Al-ani, Mohamed Jemni

Objective

Feature Extraction –

Classification –

Accuracy –

* **Experiments on Using Combined Short Window Bivariate Autoregression for EEG Classification**

**-**Dalila Trad, Tarik Al-ani, Mohamed Jemni

Objective – Using features from multiple channels of EEG and using the correlation between them

Feature Extraction – Auto Regression

Classification – SVM with Linear kernel

Accuracy – >70% <80%

|  |  |  |  |
| --- | --- | --- | --- |
| Paper Name | Authors | Algorithm Used | Accuracy |