# An Analysis and Recipe of SWLDA for Brain Computer Interfaces

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**Abstract**

Brain Computer Interfaces is a broad discipline. It uses many tools from signal processing and statistics. One of the most used algorithms is SWLDA. This algorithm is the default implementation in BCI2000 and it is implemented in many other toolboxes. However their implementation details are hidden and neglected when it should not be. This work presents an analysis of the variants versions of the algorithms, their implementation details, and an analysis on the statistical assumptions which is based upon. We tested on a public dataset of P300 for ALS patients. We also tested on a Dataset of MI. BLABLABLA

*Keywords:* `elsarticle.cls`, LaTeX, Elsevier, template

*2010 MSC:* 00-01, 99-00

## 1. Stepwise Discrimnant Analysis

There are two different alternatives of this algorithm

- MANOVA
- Logistic Regression

*Fully documented templates are available in the elsarticle package on CTAN.

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### *1.1. MANOVA*

BLABLABLA

### *1.2. Logistic Regression*

### *1.3. BCI2000 Implementation*

## 2. Statistical Assumptions

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## 3. Statistical Tests on Real Dataset

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Here are two sample references: [1, 2].

## References

## References

[1] C. M. Michel, M. M. Murray, Towards the utilization of EEG as a brain imaging tool, NeuroImage 61 (2) (2012) 371–385. `arXiv:NIHMS150003`, `doi:10.1016/j.neuroimage.2011.12.039`.
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