

## Postdoctoral position in signal processing and machine learning for brain activity analysis with EEG

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**Location:** Telecom SudParis

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**Research lab:** Samovar Lab

**Duration:** 1 year (from January 2017 to December 2017)

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Subject: Detection of human attention with electroencephalography using imperceptible electronics

Human brain is one of the most complex systems in the universe. Various technologies exist to record brain waves, e.g., electroencephalograms (EEG). This brain imaging tool helps researchers in their understanding on the complex mechanisms of the brain. Current EEG monitoring systems involve placing wet electrodes on the scalp using electrolytic gel to penetrate hair, contact the skin, and provide a clean electrical conductivity. The electronics is rigid and very costly. The goal of the project is to test a new portable and lightweight EEG headset. The focus will be on monitoring the human visual attention with this new headset.

The main tasks:

1. to fix experimental acquisition protocols to manage correctly the attention level of users.
2. to acquire EEG data of different persons with EEG headset following the fixed protocol.
3. to analyze the acquired data using signal processing tools.
4. to develop algorithms that allow: (i) extracting the appropriate features (ii) detecting the attention states of the user.

This project is in collaboration with Mines Saint Etienne, Centre of Microelectronics in Provence, *Bioelectronics Department*.

The candidate should be familiar with:

- Signal processing tools

- Machine learning

Good programming skills (MATLAB or Python, C++) are required.

Previous experience in EEG analysis would be appreciated.

How to apply:

Interested candidates should send a CV, motivation letter, copies of educational certificates, and contact information (email) of a potential referee to:

[nesma.houmani@telecom-sudparis.eu](mailto:nesma.houmani@telecom-sudparis.eu)