Microstates (MS) analysis is a method for investigating the spatiotemporal characteristics of EEG recordings. It consists of decomposing the multichannel EEG signal into a sequence of quasi-stable states, each state being characterized by a spatial distribution of EEG scalp potentials, also known as microstate maps or topographies.

**BACKGROUND**

Pycrostates implements several core functions: preprocessing tools (global field power peaks extraction, resampling), a clustering algorithm (modified version of the kmeans algorithm), clustering quality indices (Silhouette, Dunn), which are needed to perform MS analysis. It is aimed at researchers wishing to design their own microstate analyses with Python, and complements similar tools using other software, such as Cartool or the Matlab EEGLab Microstate toolbox. Pycrostates was built to fit seamlessly within the python scientific environment (numpy, scipy, pandas) and more particularly scikit-learn and MNE-python from which it is inspired in its philosophy and its implementation.

**METHODS**

Pycrostates takes advantage of continuous integration and delivery tools such as auto-test (92.05% coverage), automatic code review (grade A) and is tested against several python versions and operating systems.

In addition, this library comes with extensive documentation including descriptions of all its algorithms and functions as well as several tutorials to help researchers to get started. Finally, Pycrostates is provided under the new BSD license allowing code reuse, even within commercial applications.

**RESULTS**

Pycrostates is a new python library for EEG microstates analysis. Pycrostates is integrated within the scientific environment of python, especially MNE-python. Pycrostates takes advantage of modern development tools such as automatic testing, code quality review, which allows it to easily evolve over time. Pycrostates is open source and available on github.* We welcome any person wishing to participate in its development.

* https://github.com/vferat/pycrostates