

```
import eeg_to_fmri
from eeg_to_fmri.utils import tf_config
```

```
dataset="01"
tf.config.set_logical_device_configuration(
    tf.config.experimental.get_device_configuration(),
    [tf.config.LogicalDeviceConfiguration(memory_limit=1024)]
)

from eeg_to_fmri.models.synthesizers import EEG_to_fmri
from eeg_to_fmri.data import preprocess_data, eeg_utils, data_utils
from eeg_to_fmri.learning import train, losses
from eeg_to_fmri import metrics
from eeg_to_fmri.utils import viz_utils
```

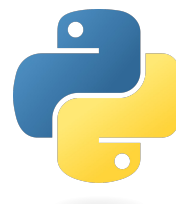


EEG-to-fMRI

Neuroimaging Cross Modal Synthesis in Python

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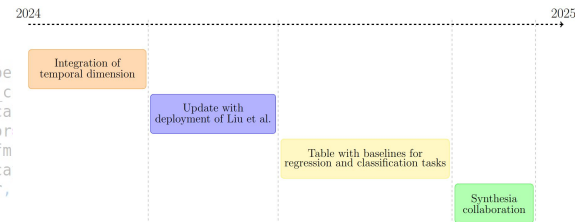


eeg-to-fmri is a Python package that implements state-of-the-art regression techniques to map EEG recording segments to fMRI representations

```
import eeg_to_fmri

with tf.device('/CPU:0'):
    model = EEG_to_fmri(latent_dimension, eeg_train.shape,
                        weight_decay=weight_decay, skip_c
                        random_fourier=True, topographica
                        conditional_attention_style_prior
                        fmri_args = (latent_dimension, fm
                        max_pool, batch_norm, weight deca
                        n_stacks, True, False, outfilter,
```

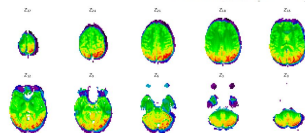
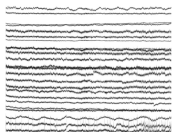
Plan for 2024



Objectives

- provide research labs with tools to easily map EEG to fMRI;
- extend, in a package, various methods that are foundational in the task;
- extrapolation of methodologies to classification settings;
- easy integration in an health care setting.

Background

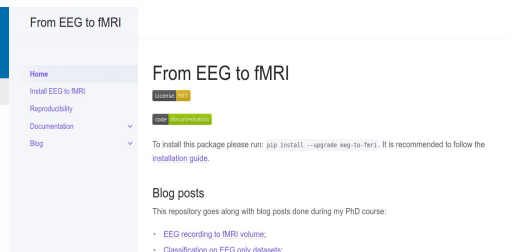
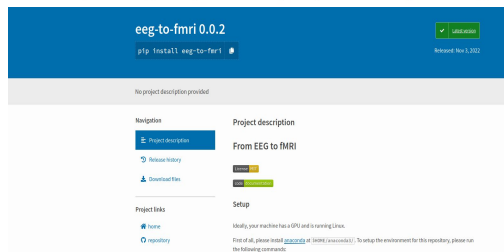


```
with tf.device('/CPU:0'):
    train_data, test_data = preprocess_data.dataset(dataset
```

```
train.train(train_set, model, optimizer, loss_fn, epochs=10, u_architecture=True, val_set=N
```

Open source contributions

We welcome and encourage third party scientific contributions coming from other laboratories. The goal is to allow health care software integration for diagnostic settings.



Electroencephalography (EEG) captures the **electrical field produced by neuronal activity**, which happens when the neurons fire. When the neurons fire, ions and energy are spent by the neuron cell. The **blood** in its turn **feeds nutrients and oxygenates** the cell, for the cell to keep functioning properly. In its turn, the blood flow is measured by **functional magnetic resonance imaging (fMRI)**, by building a 3D image of the brain. Both of this signals evolve through time, being possible to **record them simultaneously**. Consequently, we can have pairs of EEG and fMRI segments and construct the basis for a **multivariate regression task**.