# EEG Biometric Authentication

This Python package provides tools for biometric authentication of EEG (Electroencephalography) data. It includes functionalities for data loading, model creation (specifically a Convolutional Neural Network), training, evaluation, and visualization.

## Features

- \*\*Data Loading:\*\* Load EEG data from CSV files.

- \*\*Model Creation:\*\* Define a Convolutional Neural Network (CNN) model for EEG data classification.

- \*\*Training and Evaluation:\*\* Train the CNN model and evaluate its performance.

- \*\*Prediction:\*\* Make predictions on new EEG data.

- \*\*Visualization:\*\* Visualize evaluation metrics such as accuracy and confusion matrix.

## Installation

You can install the EEG Analysis Package using pip:

```bash

pip install eeg-analysis-package

Usage

Here's a basic example of how to use the package:

python

Copy code

from eeg\_analysis\_package.data.loader import load\_data

from eeg\_analysis\_package.models.cnn\_model import create\_cnn\_model

from eeg\_analysis\_package.train\_eval.trainer\_evaluator import (

    train\_model,

    evaluate\_model,

    predict\_labels,

    calculate\_subject\_accuracies,

    generate\_confusion\_matrix

)

from eeg\_analysis\_package.utils.visualization import plot\_confusion\_matrix

# Load data, create model, train model, evaluate model, etc. (as shown in the example script