NeurIPS 2026 · Evaluations and Datasets

EEGFaceSem

An EEG Benchmark with Paired Generative Latents for Semantic Visual Modeling

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Paper · data · code

EEG responses, face images and generative latents in one benchmark

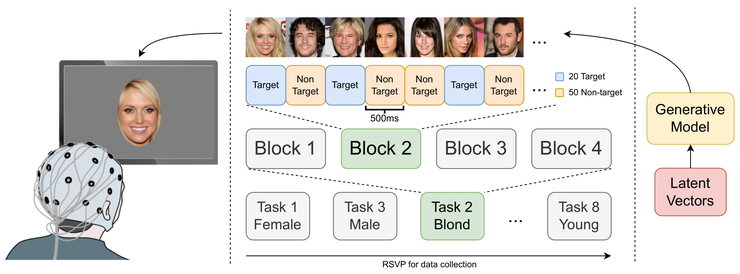
01 The resource

30
participants

8
attention tasks

32
EEG channels

512D
generative latents

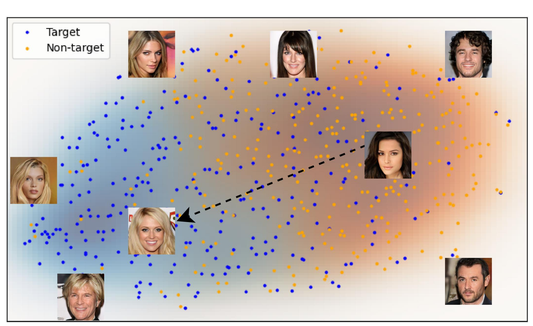


Participants attend to a semantic feature while generated faces appear every 500 ms. EEG responses are paired with stimulus images and their latent vectors.

Tasks span perceived gender, age, hair colour and smiling.

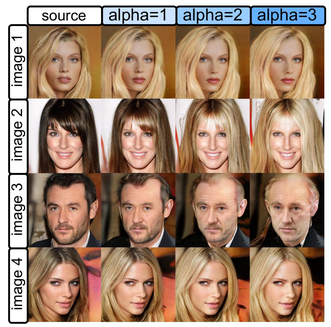
02 From EEG to images

The paired latent space connects neural responses to semantic representations and editable images.



A. Joint representation

Self-supervised EEG–latent alignment; target labels colour the UMAP for interpretation.

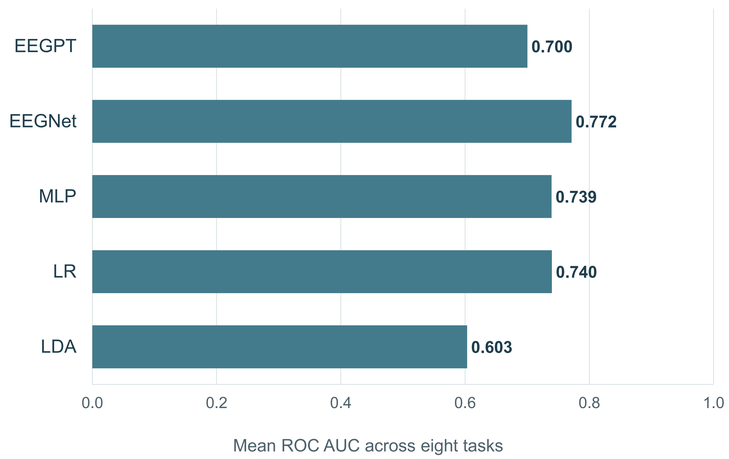


B. Image editing

A supervised LDA → SVR direction progressively edits the “blond” attribute.

03 Benchmark tasks

Target vs non-target decoding across eight tasks. Shown: cross-subject evaluation (leave one participant out).



Also included: within-participant and subject-adapted evaluation. EEGNet reaches 0.806 mean AUC after subject adaptation.

Scope: controlled face stimuli and task-specific attention. Evaluation protocols and RSVP controls are documented in the paper.

EEGFaceSem.github.io/

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