

A Benchmark scope and analysis horizons

Reasoning knowledge-only

T1 EEG Knowledge QA

- MedMCQA
- 38 four-choice questions
- Knowledge-only

Q: In a normal adult sitting with eyes closed EEG will show

- A. Beta
- B. Delta
- C. Alpha
- D. Theta

Answer Option

Short-horizon analysis single-label outputs · 2 s-21.5 min

T2 Artifact Identification

- EEGdenoiseNet
- 300 single-channel epochs
- 2 s

clean
EOG
EMG

Class Label

T3 Normal-vs-Epileptic Screening

- Bonn
- 188 single-channel recordings
- ~23.6 s

normal
epileptic

Class Label

T4 Dementia Cohort Classification

- OpenNeuro ds004504
- 69 19-channel recordings
- ~5.1 - 21.5 min

Fp1
F3
:
Q2

Class Label

Long-horizon analysis interval/sequence outputs · 12.4 min-23 h

T5 Seizure Event Detection

- CHB-MIT
- 280 multichannel recordings
- ~12.4 min - 4 h

Fp1-F7
Fp1-F3
Fp2-F4
F8-T8

Seizure Intervals

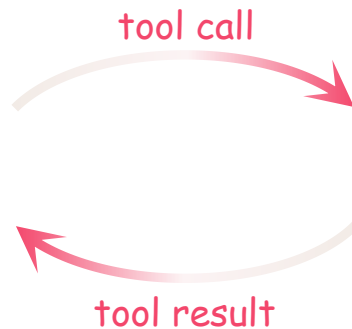
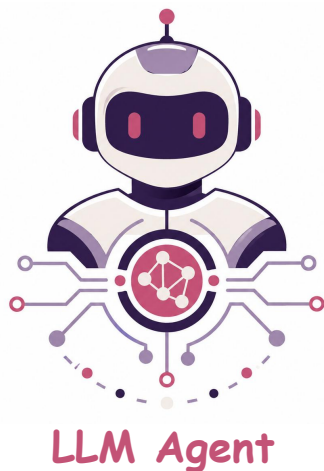
T6 Sleep Staging

- Sleep-EDFx
- 197 PSG recordings
- ~5.7 - 23 h

W
REW
N1
N2
N3

Sleep-stage sequence

B Agent-environment interaction



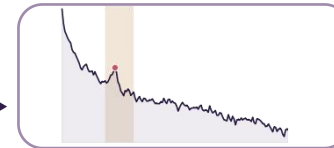
EEG Analysis Environment

- Recording metadata
- Signal quality assessment
- Frequency-domain analysis
- Time-domain analysis
- Windowed feature analysis
- Transient candidate detection
- Cross-channel analysis

call: compute_psd

"tmin": 120, "tmax": 180
"method": "welch", "fmin": 0.5, "fmax": 40

result



call: compute_band_power

"tmin": 120, "tmax": 180

result



call: detect_transients

"tmin": 10, "tmax": 14,
"min_amplitude_uv": 70,
"max_candidates_per_channel": 12

result

