# Weekly Work Report 5/9/2025

**This Week:**

* Discussed the working plan for the summer semester with Prof, Mutis, with a primary focus on EEG signal analysis and progressing toward the goal of finalizing the paper by September.
* <https://ar5iv.labs.arxiv.org/html/1602.08225v1>

Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, Ł., & Polosukhin, I. (2017). Attention is all you need. *Advances in Neural Information Processing Systems*, *30*. https://arxiv.org/abs/1706.03762

Emotion recognition using EEG and eye movement signals

(Positive, Neutral, Negative)

EEG: Power Spectral Density (PSD), Differential Entropy (DE) across delta, theta, alpha, beta, gamma bands; Eye: Pupil diameter (mean, std), fixation duration, blink frequency, saccade amplitude, etc.

A table of information

AI-generated content may be incorrect.

A table of negative and negative results

AI-generated content may be incorrect.

* Gained hands-on experience with the **Pupil Player software** and reviewed relevant Pupil Labs documentation.
  + Identified several points that require further discussion regarding the setup and processing of raw pupil data collected during our EEG experiments.

Minimum data confidence: 0.6 (0.8) keep default? What others do similar to our experiment, VR (Hololense), Eye Tracker? Follow them!

* **Mental state analysis** depends on subtle variations in pupil size. Noisy or uncertain data can introduce false signals.
* A **higher confidence threshold** ensures you’re using data where the pupil was clearly detected (e.g., eye open, not occluded, good lighting, no motion blur).

A screenshot of a video player

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Fixation Detector

Maximum Dispersion [degrees]: 1.5 (1)

Minimum Duration [milliseconds]: 80 (120)

Maximum Duration [milliseconds]: 220 (2000)

A screenshot of a black screen

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Blink Detector

Filter Length [seconds]: 0.2

Onset confidence threshold: 0.5 (0.6)

Offset confidence threshold: 0.5 (0.8)

A screenshot of a computer

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