

Are You Bored Yet? - Documentation

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1. Boredom Score Definition

We define a **continuous disengagement score** (boredom) for each trial using two main behavioral indicators:

- **Reaction Time (RT)**
- **Dropout Indicator**
- **Correct Choice**

The raw boredom score is computed as:

$$\text{Boredom_Raw} = 0.8 \times \text{srt} + 0.3 \times \text{dropout} \times \text{rt} + 0.4 \times \text{Leave Frequency} \times \text{rt} - 2 \times \text{Choice Average}$$

Where:

- **srt** is a rolling mean of reaction times over a 30-trial window.
- **dropout** is a binary flag indicating trials with ITD(inter-trial delay) > 5 seconds.

We then normalize the raw boredom score within each session to ensure comparability across sessions:

$$\text{boredom_norm} = \frac{\text{boredom_raw} - \mu}{\sigma}$$

2. Behavioral Proxies for Disengagement

The following behavioral signals were selected as proxies for disengagement:

- **Slow Responses:** Increasing reaction times typically reflect reduced attention or fatigue.
- **Dropouts:** Trials without any action show disinterest.
- **Rolling Accuracy Drop** (used during feature engineering): A decline in performance shows borenness in performing correct action.