2022 IUCRC BRAIN Annual Meeting

Neural dynamics of actor-actor dyads during an acted scene

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Focus, Need, and Industrial Relevance

Focus: Acting requires a range of social, cognitive, and affective skills, including memory, verbal ability, and emotional control, such as empathy.

Need: Developing social skills is essential for achieving a satisfactory standard of living since it encompasses the full range of human social performance and enables us to interact with others in a variety of situations and achieve our personal goals.

Industrial Relevance: The study of human interactions could result in the development of effective training for communication skills in the workplace as well as therapies to treat social cognition disorders.

Project Objectives

- To determine **brain-to-brain communication patterns between actors** in a real-world setting.
- To analyze the data for preprocessing within the context of the actions taken.

Project Outline

An analysis of social interaction through acting using ecologically valid settings from a real-life performance, MoBI data collection from acted scenes from "Closer", and dramaturgical labeling by a dramaturg expert.

Fig, 1. Experimental Setup (A) Front View. Presentation of Director, Dan, Alice and dramaturg expert from right to left (B) Right view

Research Methods

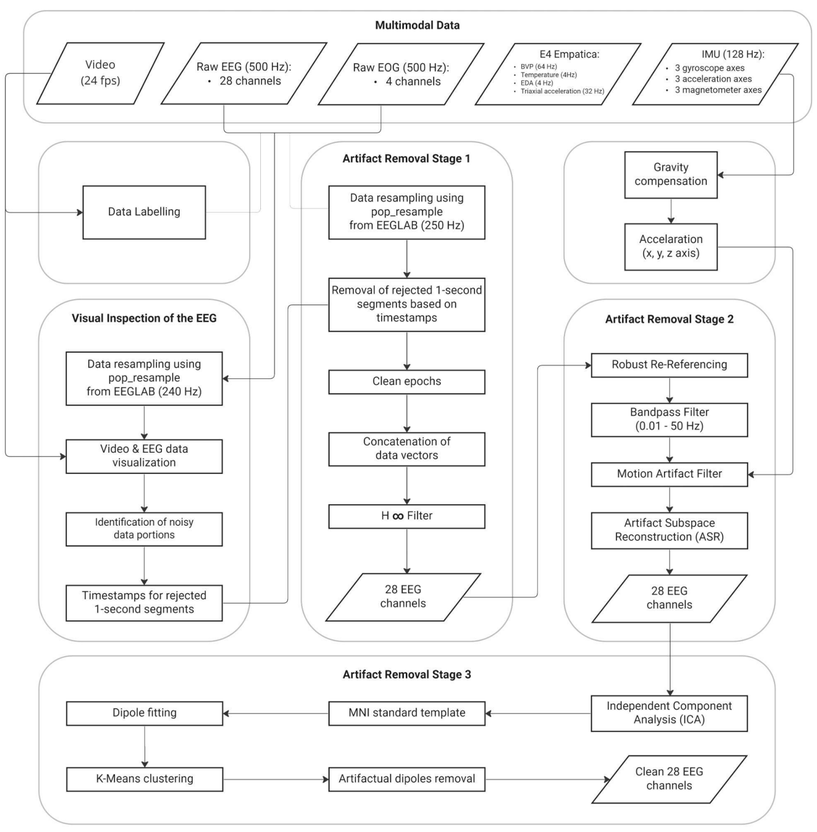

Fig. 2. An overview of the preprocessing and processing steps for each dataset.

The sample is composed of **6 healthy actors** (Ages 21-26 years old). The experiment was conducted over the course of four days at the **Quintero Theater** (Kathrine G. McGovern College of the Arts, UH), divided into two one-hour rehearsals and 7-minute performances per group.

Project Results

- Signal filtering was improved by incorporating the scene context into the data obtained.
- EEG signals denoised
- Clusters related to Brodmann Areas, with acting-related functions

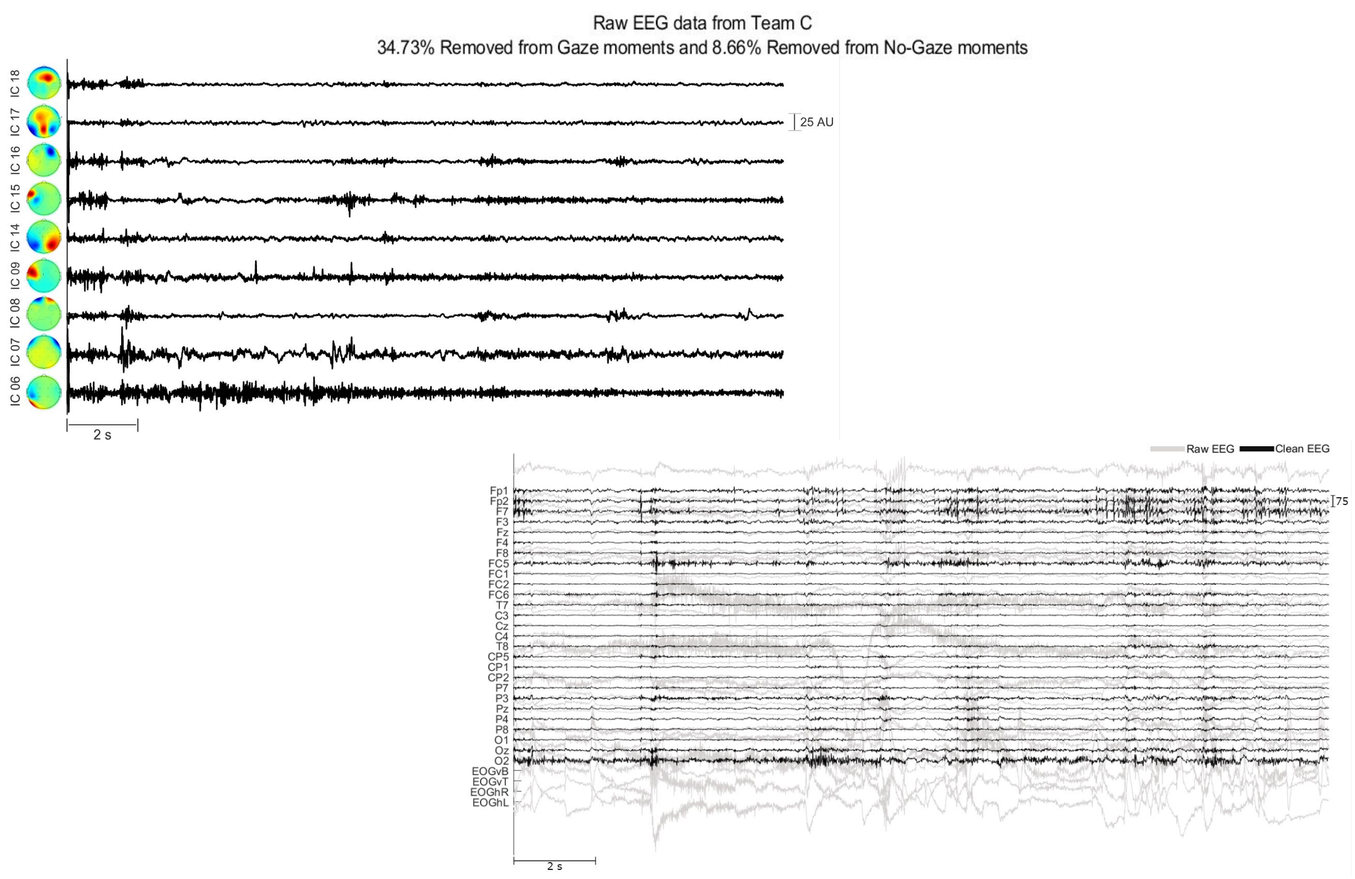

Fig. 3. (A) Signal portion analyzed, red sections indicate data that is strongly affected by actors' movements and will be discarded. The red line represents the beginning of no-gaze between actors. (B) Scene from the data to be conserved (C) Scene from removed data.

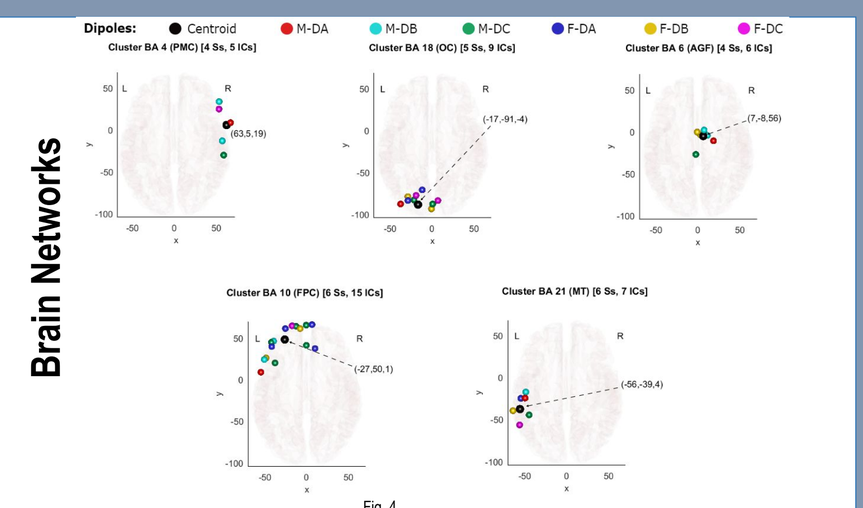

Fig. 4.

Project Goal

Acting can provide a window into neuroscience's role in social interaction, helping to better understand how others influence our thoughts, feelings, and actions.

Deliverables and Expected Impact

- Art science conference article, scientific paper, and annotated dataset publication.
- This study seeks to detect significant differences in brain-to-brain synchrony between moments of gaze and no gaze, in order to develop prediction models.
- Knowledge gathered will be beneficial for artistic practice, brain-to-brain neural interfaces, and performance education for theatre and screen.