



A Brain-Based Communication and Orientation System

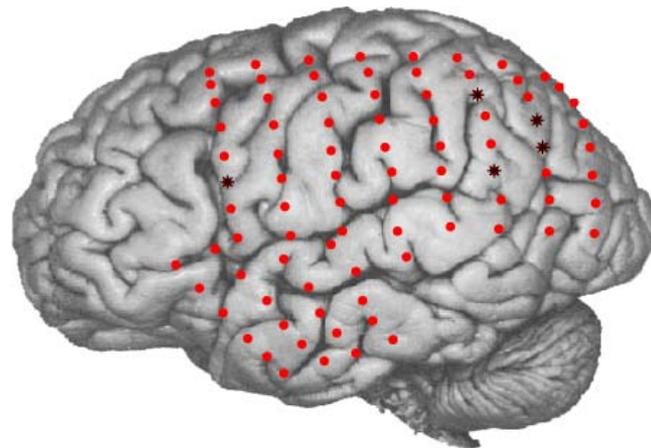
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Objective

Demonstrate that interaction with the brain can provide useful information about a person's directional orientation and imagined speech.



Red dots show electrode locations. Black dots show locations that carry information about the direction of a person's attention.

Objective Approach

- Determine brain responses related to directional orientation and imagined speech
- Build mathematical and software tools that can utilize that information
- Use those tools to provide a real-time assessment of a person's directional orientation and imagined speech

Status

- Designed and implemented initial experimental paradigms
- Initial experiments provide encouraging information that brain signals carry information about a person's direction of attention, eye gaze, and different aspects of actual and imagined speech



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- **Progress on objectives of the initial nine months of the project**
 - Hired personnel and acquired human subject approval by ARO and MURI partners
 - Designed and implemented initial experiments
 - Began human experimentation
- **Research plan for the next 12 months**
 - Continue with experiments and collect brain signals from the surface of the brain
 - Begin to relate those brain signals to relevant parameters of directional orientation (i.e., direction of attention, intended movements, and eye gaze) and actual/imagined speech
- **Long term objectives (demonstrations)**
 - In this project, we will demonstrate that brain signals can provide substantial information about directional orientation and imagined speech; and that this information can be decoded in real time
 - Towards the end of the project, we also anticipate to provide evidence to demonstrate that human performance can be augmented using signals recorded directly from the brain