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Neural Networks of Eye-Movements During Reading

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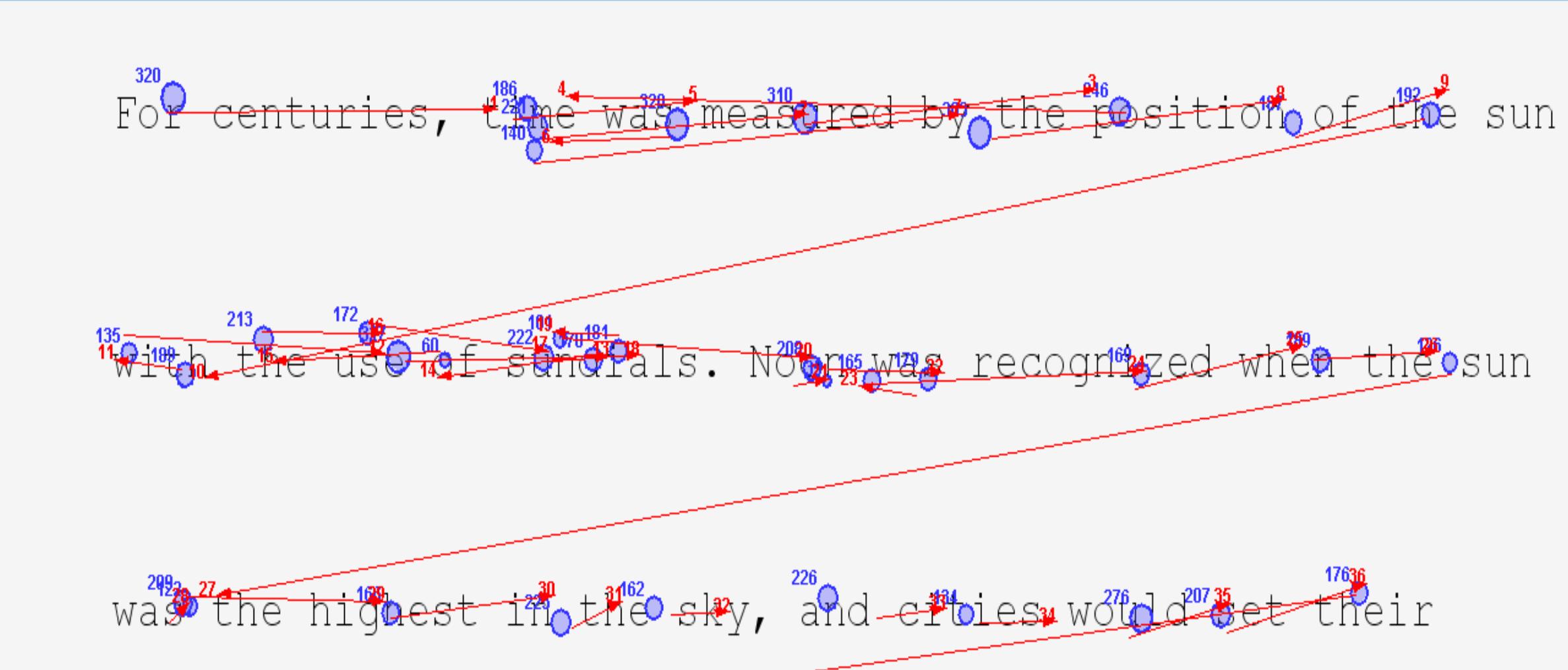
Neural Networks of Eye-Movements During Reading

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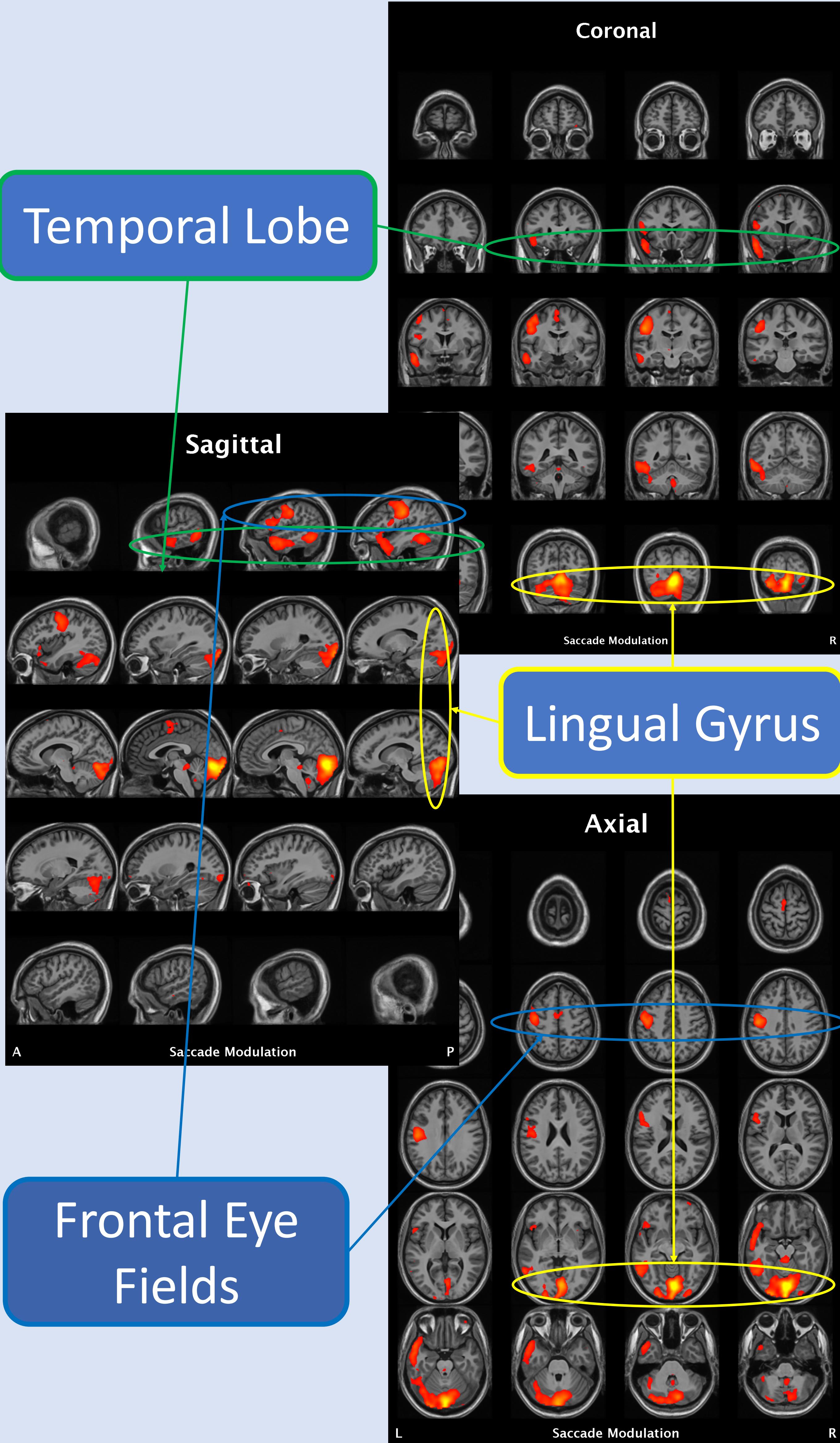
Introduction

- Reading is a part of normal life.
- When reading we move our eyes 2-4 times per second.
- Each movement is called a **saccade**, while each pause to read is called a **fixation**.



- Progress has been made understanding saccade control during deliberate tasks.
- Not much is known about saccade control during more automatic tasks like reading.
- **METHOD:** Using fMRI concurrently run with eye-tracking we looked at BOLD MRI response compared to the amplitude of saccades, for 43 participants performing a simple paragraph reading task.

Results



Results

- The results confirm our expectations. Significant regions included:
 - Temporal lobe**, where we process spoken language.
 - Lingual gyrus**, involved in visual language processing.
 - Frontal eye fields**, involved in controlling where we look.

Discussion

- Establishing a basal level of normal eye-control fMRI response will provide:
 - Better diagnostics for many brain health issues (TBI, stroke, etc.)
 - Targeted therapies to help dyslexic individuals and others who struggle with reading.
- Further research should investigate the power of reflexive eye movements as a window to the specific brain functions.