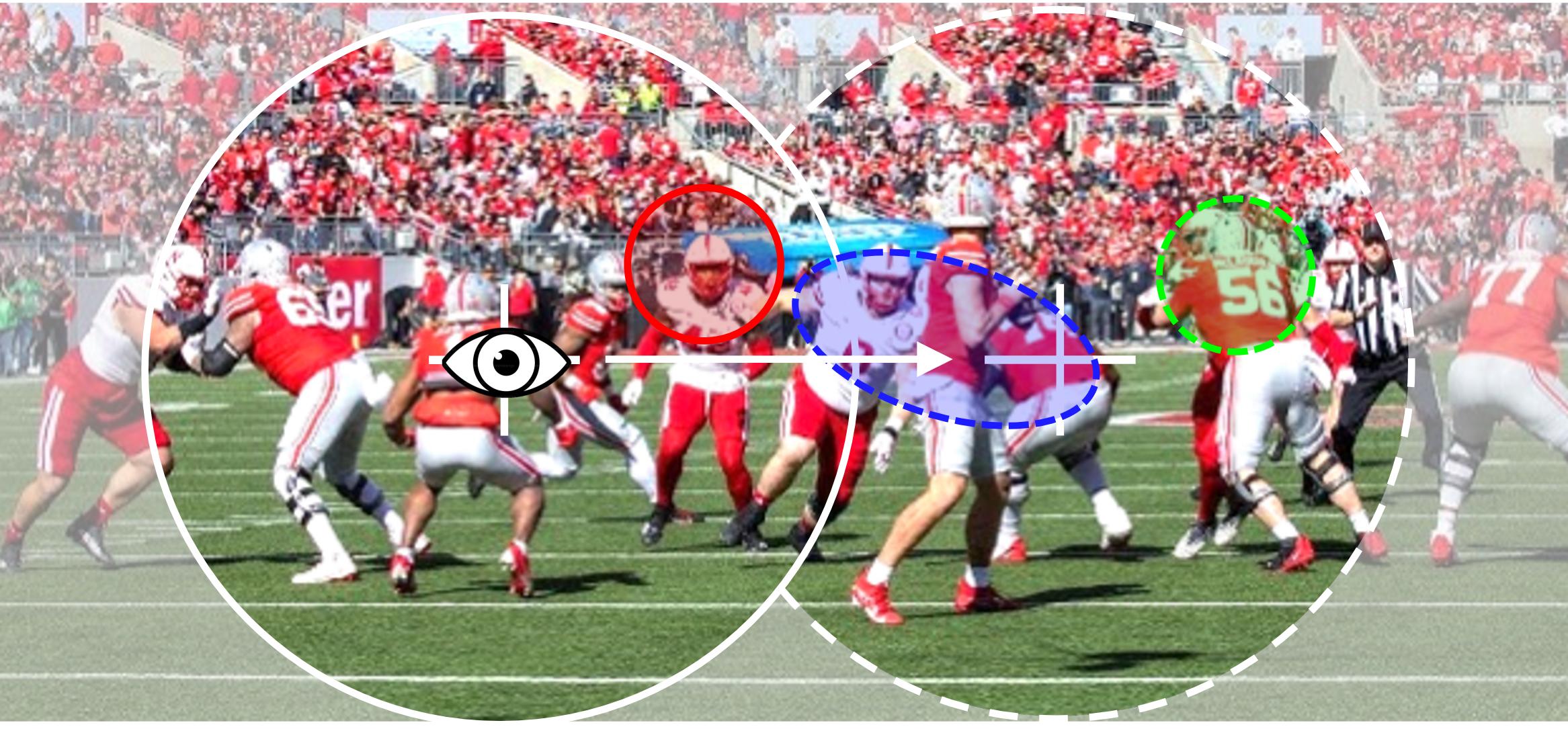




Voxel-Wise Predictive Encoding Models Reveal Evidence for Pre-Saccadic Remapping in the Human Visual Cortex

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INTRODUCTION

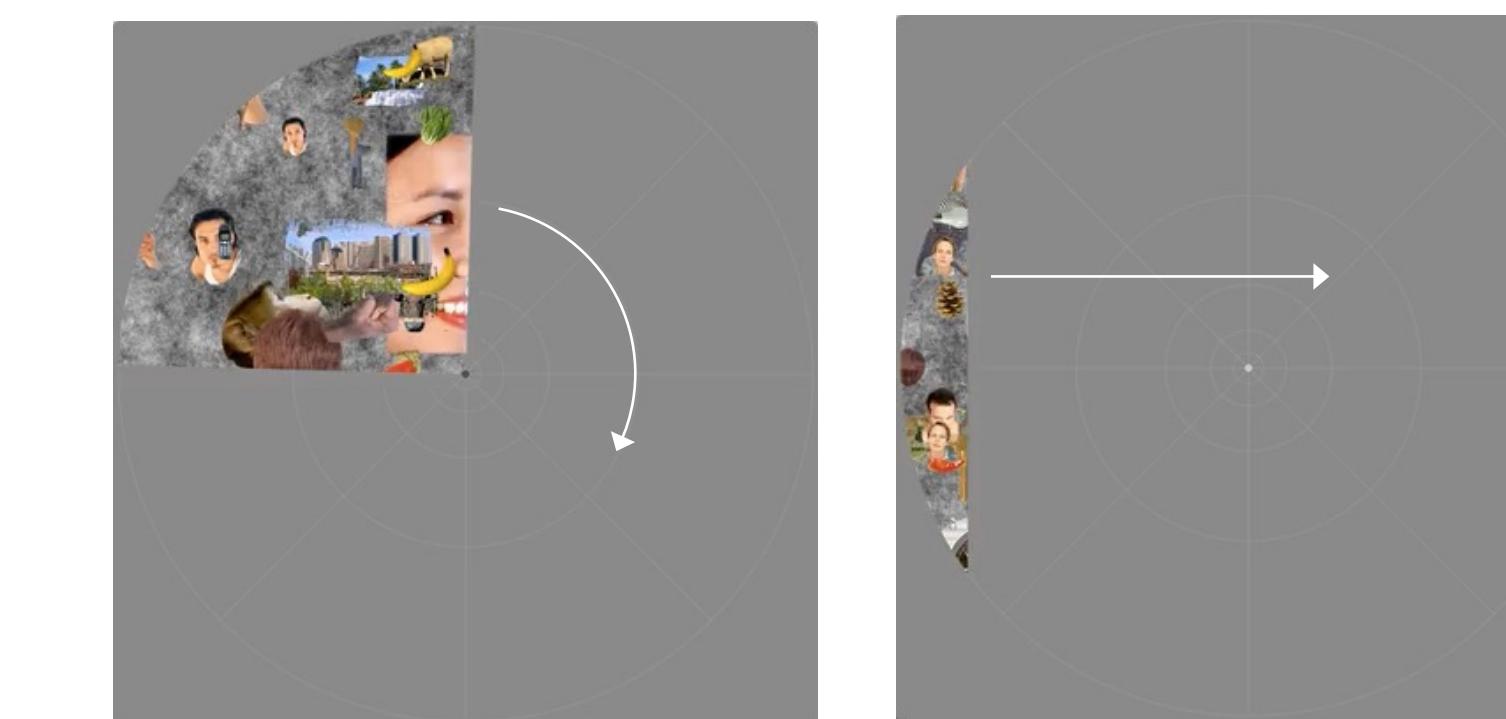


- Saccades drastically shift retinal visual inputs.
- Receptive fields (RFs) of visual neurons in non-human primates are remapped toward new spatial locations in anticipation of saccade^{1,2}.
(e.g., Forward remapping, Convergent remapping)
- Existing evidence mainly originates from invasive electrode recordings in non-human primate models³.
- It remains unclear whether analogous remapping is employed in the human visual system and how it relates to behavior³.

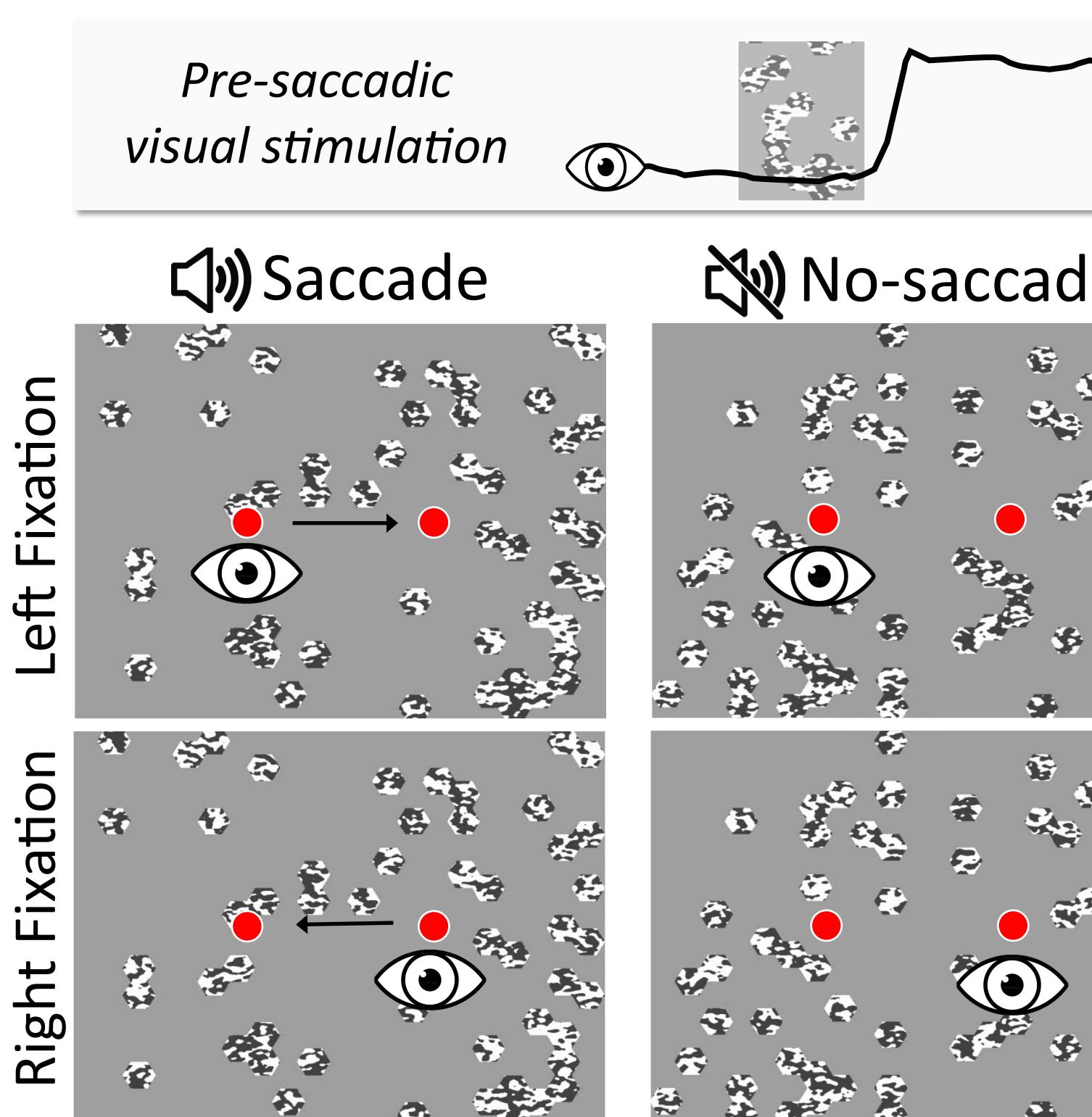
Can we develop a novel fMRI paradigm to study pre-saccadic remapping in the human brain?

METHODS

□ population Receptive Field (pRF) Mapping session

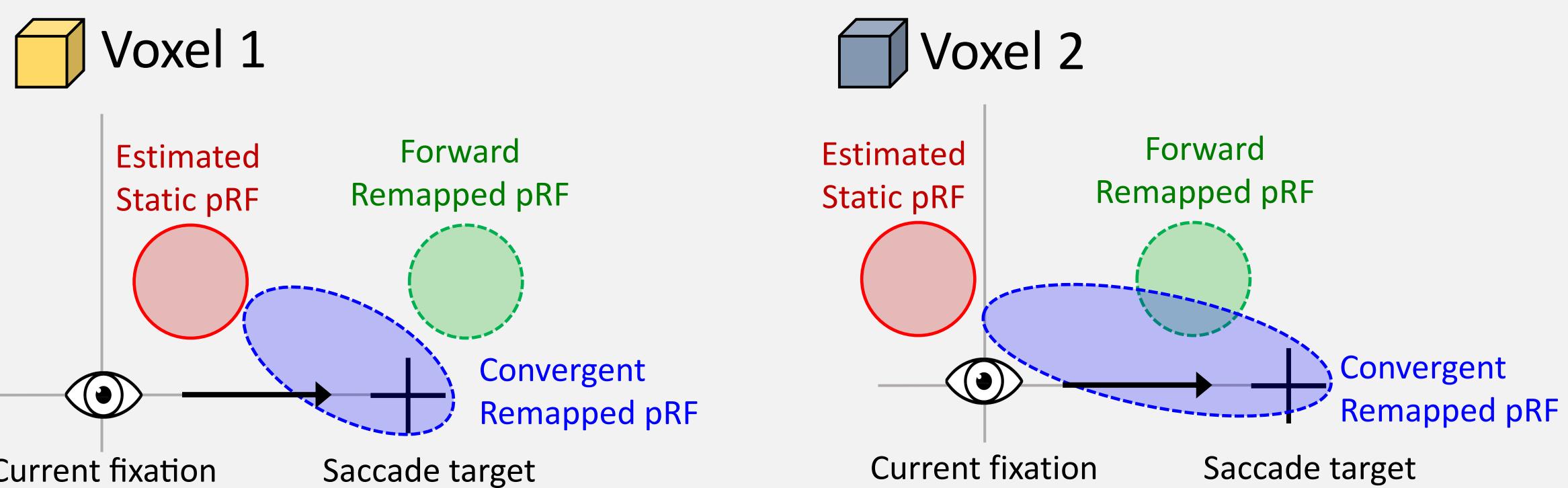


□ Main experiment session

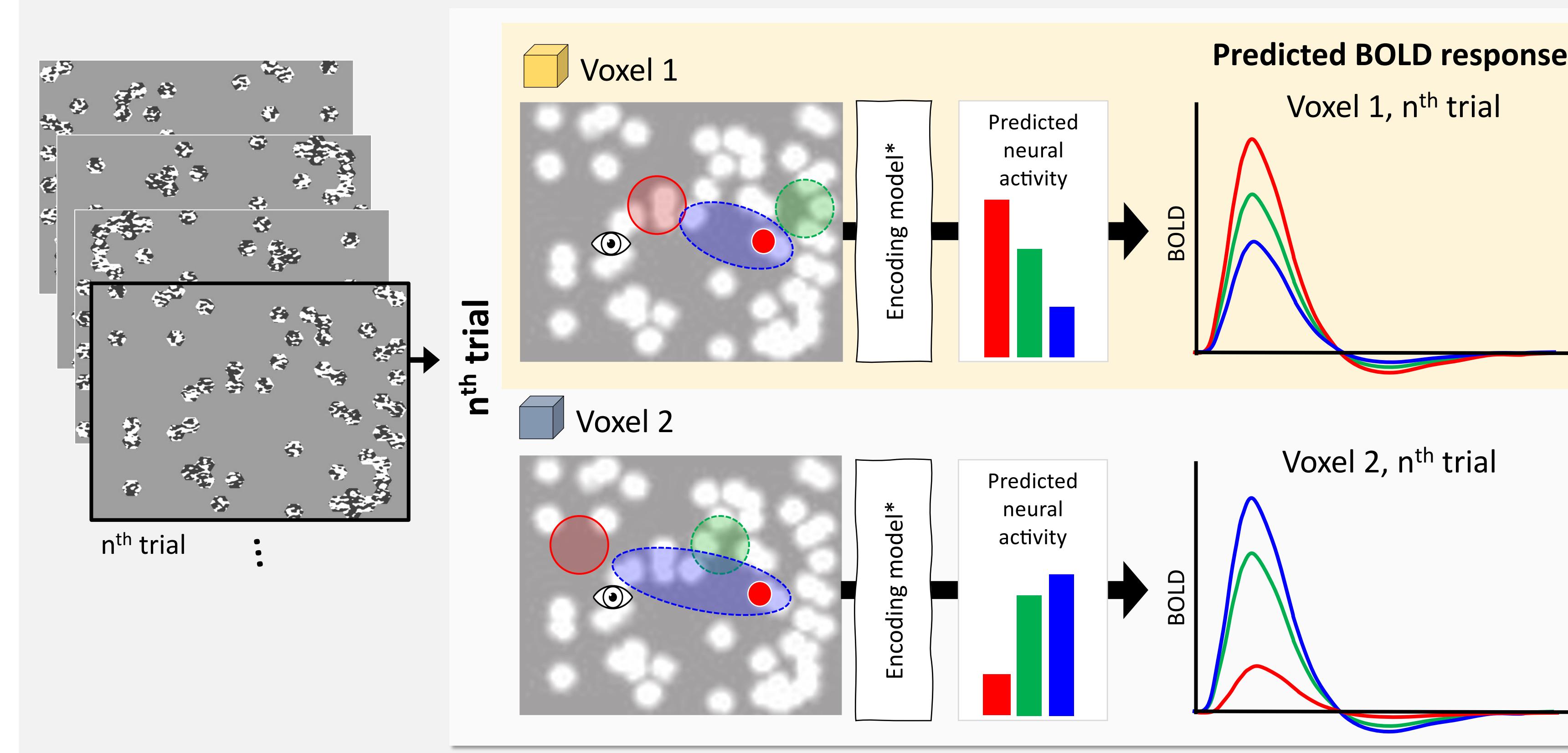


VOXEL-WISE ANALYSES

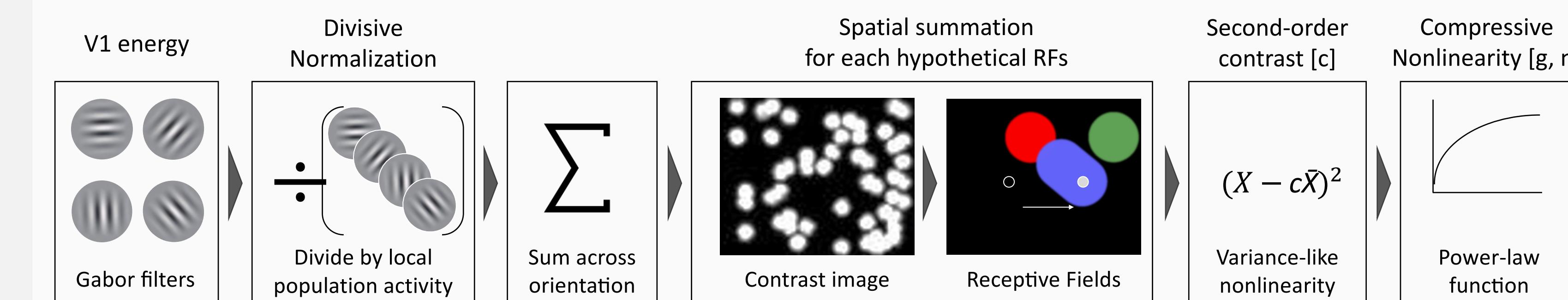
- Static and hypothetical remapped pRF models.



- Voxel-wise Predictive Encoding Model

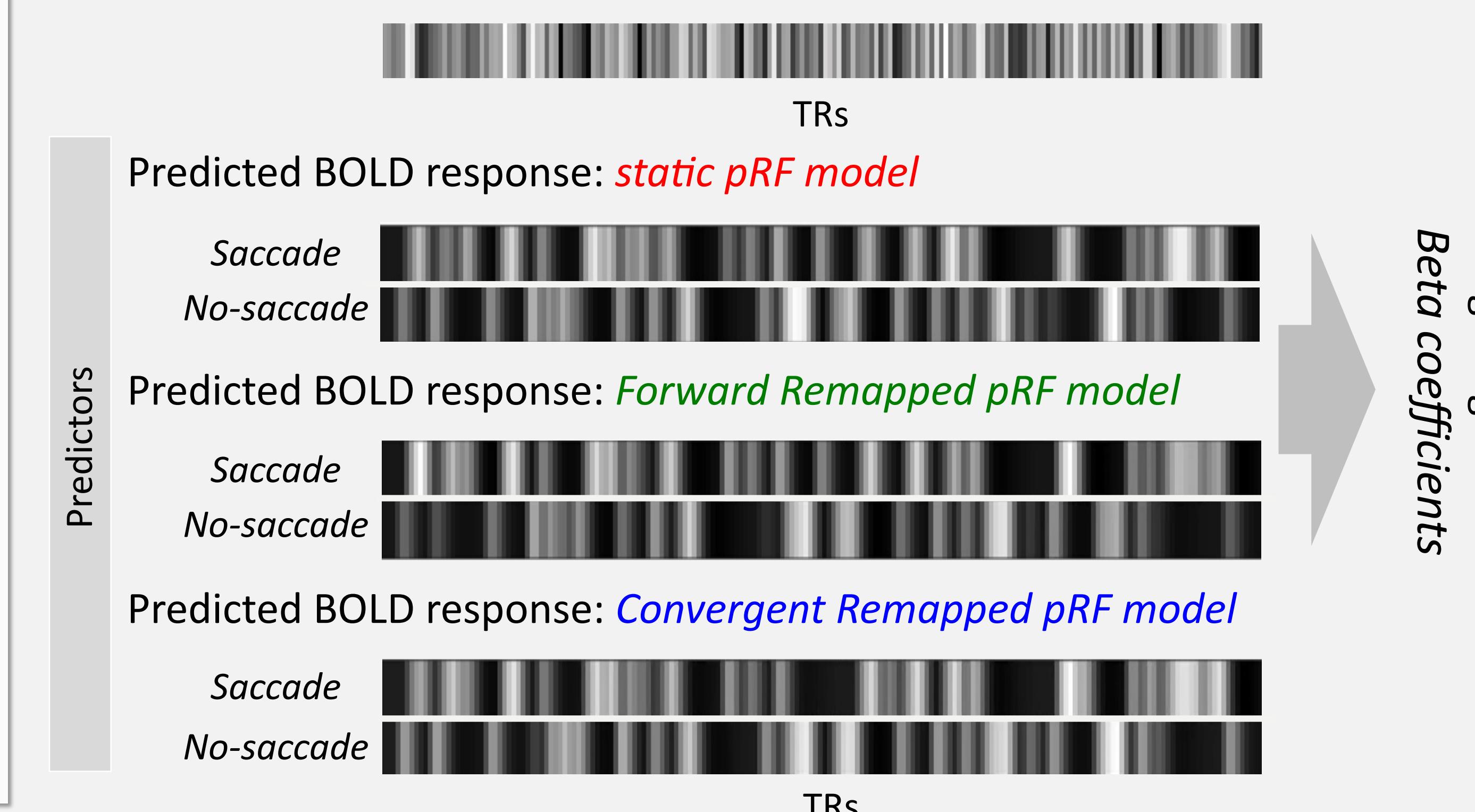


*Second-Order-Contrast encoding model⁴

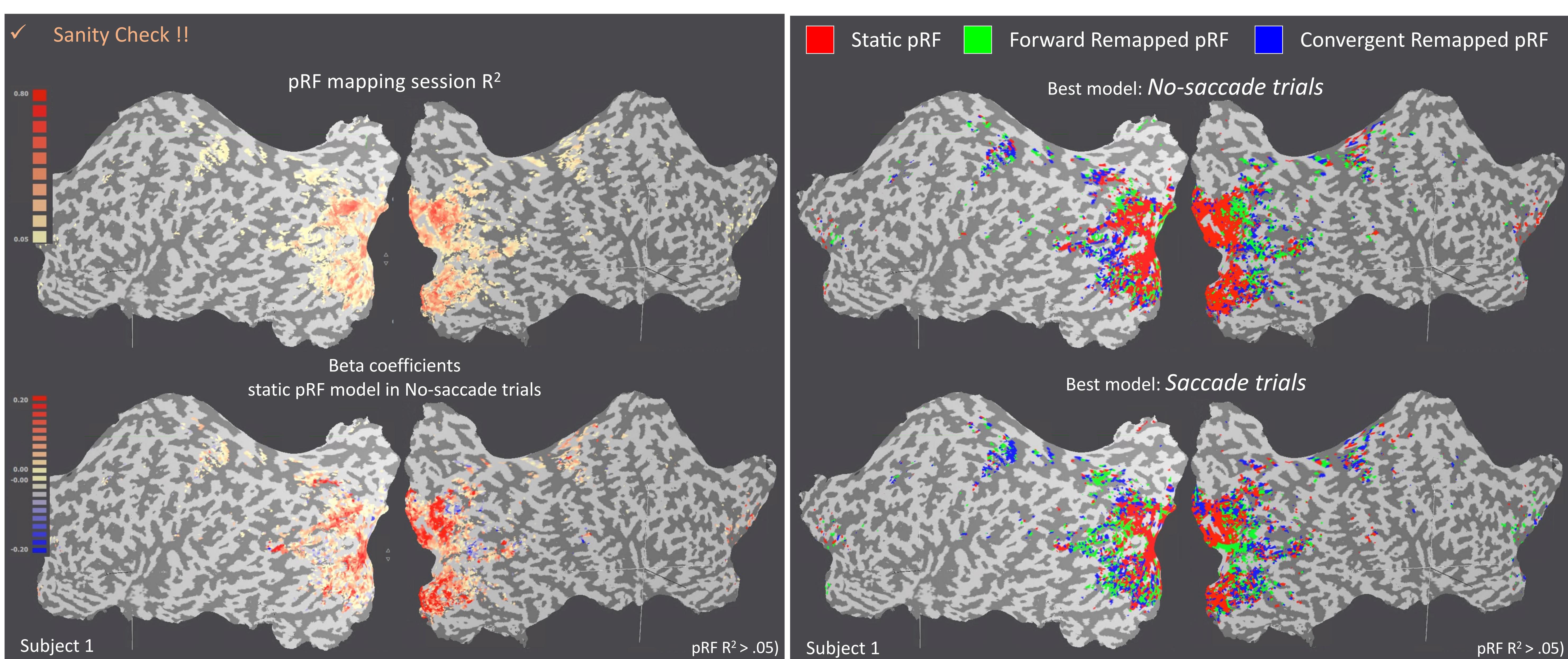


"Which model explains neural response the best?"

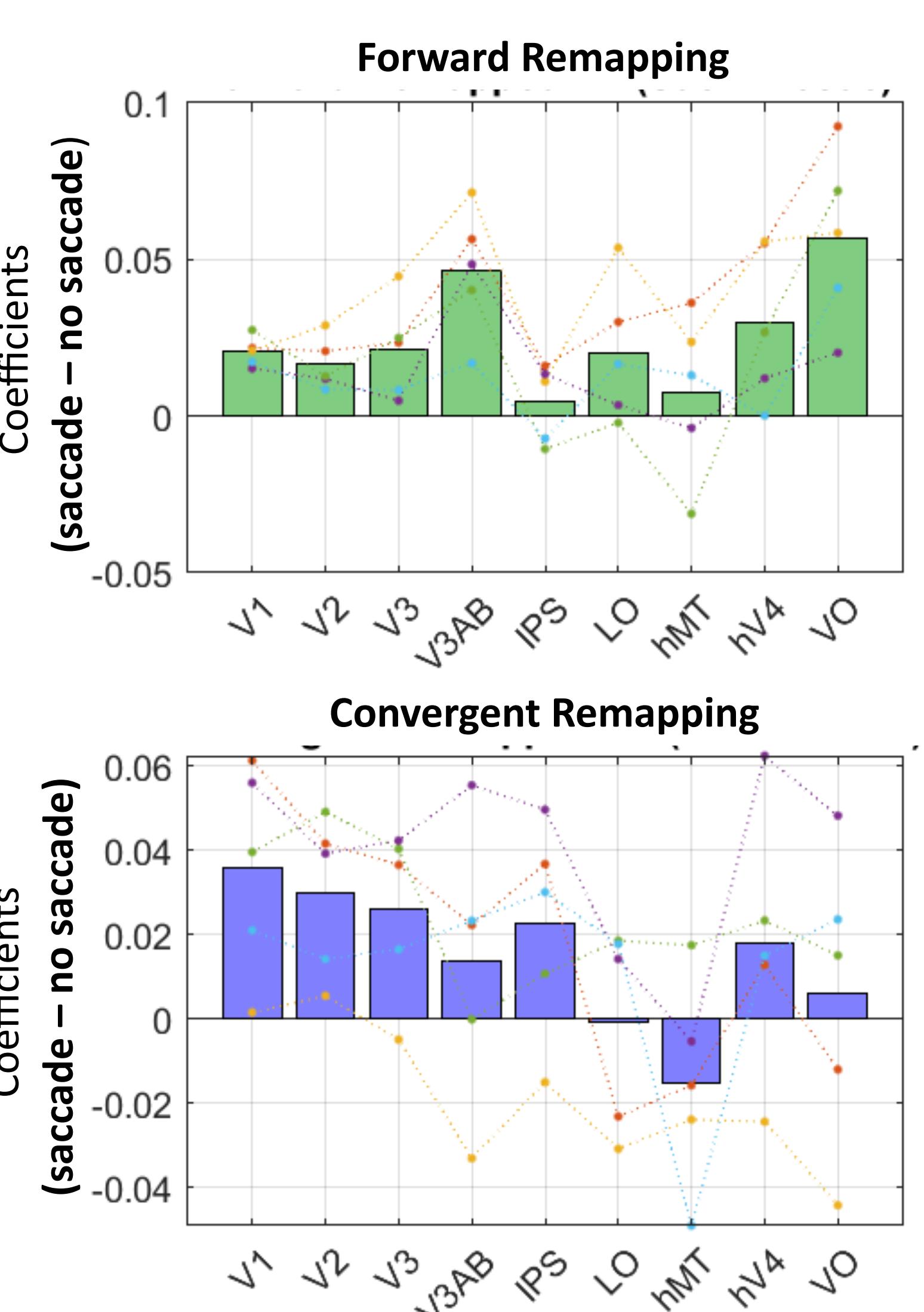
- Measured BOLD responses in main experiment session



PRELIMINARY RESULTS (N=5)



"How is pre-saccadic remapping employed across visual areas?"



PRELIMINARY CONCLUSIONS

- We developed a novel paradigm to probe pre-saccadic remapping of receptive fields at a voxel level across the human visual system.
- Forward and convergent remapping was found across multiple retinotopic visual areas.

FUTURE DIRECTIONS

- More subjects & more sophisticated forms of remapping models.
- Thoroughly test how voxel-wise spatial remapping varies across the visual hierarchy.
- Does the type or extent of remapping depend on a voxel's pRF properties, functional specialization, and/or connectivity profile?

REFERENCES

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