

Feedforward and Feedback Neural Processing Revealed with MEG-fMRI Fusion

Submission ID 3000235
Submission Type Poster
Topic Neuroscience
Status Submitted
Submitter Dimitrios Pantazis
Affiliation MIT

SUBMISSION DETAILS

Presentation Type Oral Presentation

Presentation Abstract Summary While popular computer vision models, such as deep neural networks and HMAX, have been inspired by the brain's feedforward transformations in the ventral stream, the rich dynamics and complex role of feedback brain activity remain largely overlooked. A systematic characterization of the feedforward and feedback processing of the ventral visual pathway can offer novel insights in the duration and sequencing of cognitive processes, suggesting computational constraints and new architectures for computer vision models. Here we combined a rapid serial visual presentation paradigm with a novel MEG-fMRI fusion method to map the representational space of the ventral visual pathway. Our results revealed a clear dissociation between feedforward and feedback early visual processes, with well-defined temporal signatures for both mechanisms.

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Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Dimitrios *	Pantazis *	MIT	pantazis@mit.edu
Yalda	Mohsenzadeh	MIT	yalda@mit.edu
Radoslaw	Cichy	Freie University Berlin	rmcichy@zedat.fu-berlin.de
Aude	Oliva	MIT	oliva@mit.edu

Keywords

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MEG
fMRI
representational similarity analysis
feedforward
feedback
RSVP
ventral visual pathway