Is EEG better left alone for decoding?

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Alexander Enge
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MAX PLANCK INSTITUTE
FOR HUMAN COGNITIVE AND BRAIN SCIENCES

We analysed 7 experiments


ERP CORE: An open resource for human event-related potential research

Emily S. Kappenman [a b], Jaclyn L. Farrens [a], Wendy Zhang [a b], Andrew X. Stewart [c], Steven J. Luck [c]

https://erpinfo.org/erp-core

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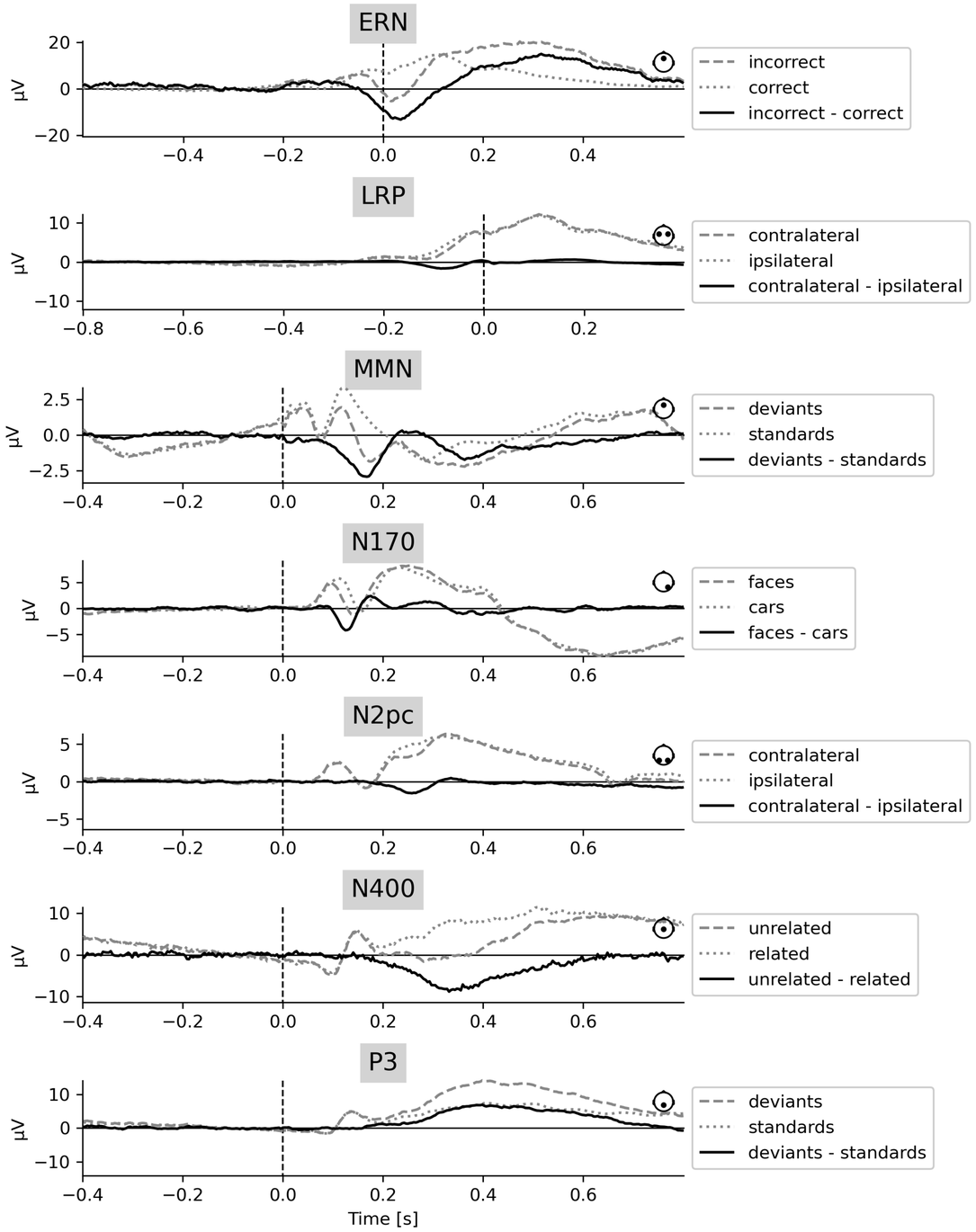
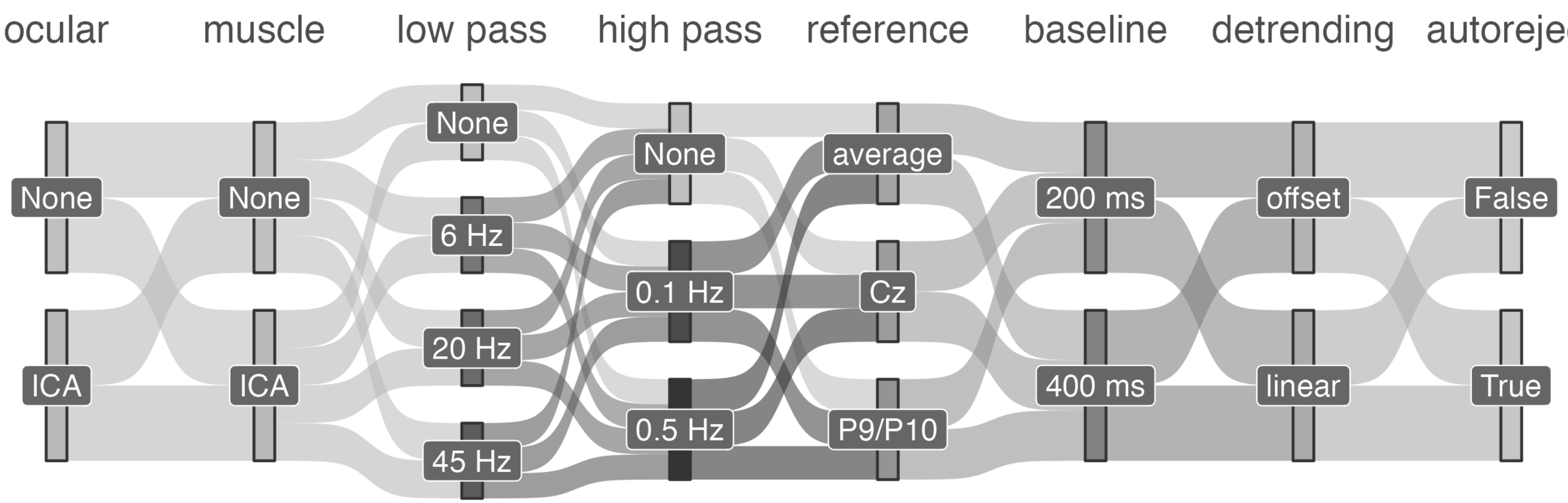
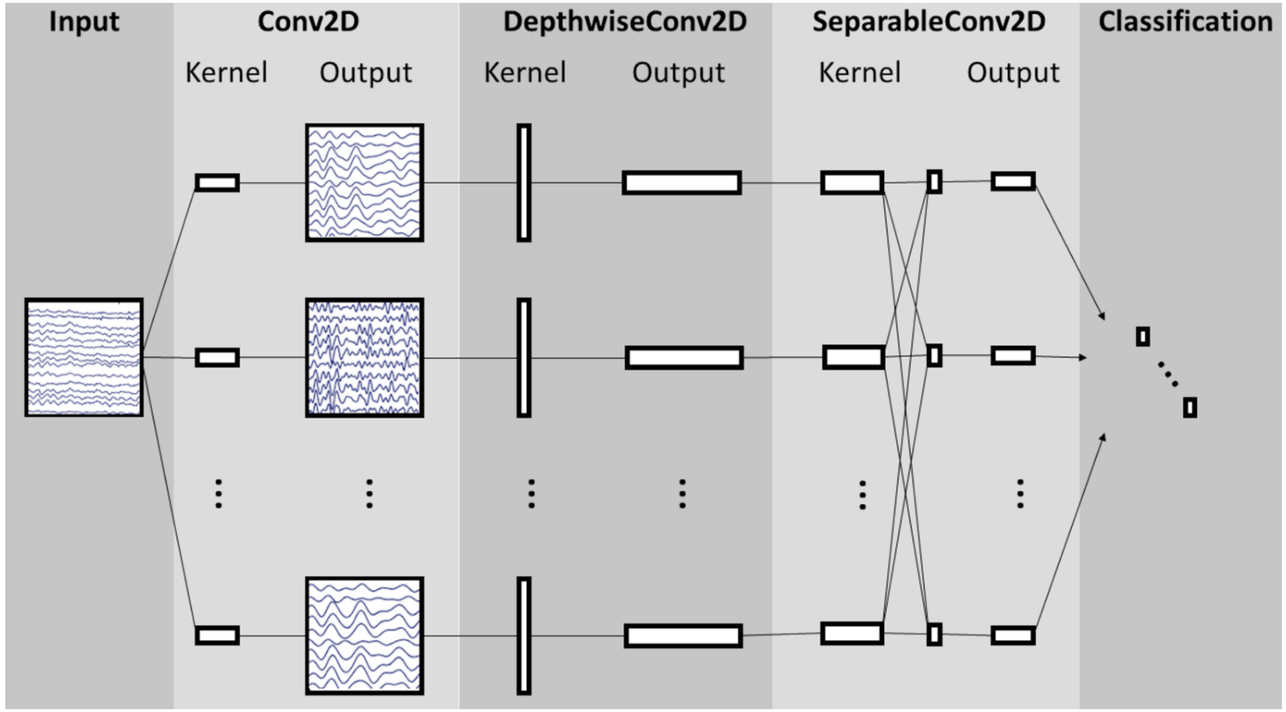


A multiverse for preprocessing



Decoding

EEGNet (Convolutional Neural Network-based)



Lawhern et. al 2018 J.NeuralEng

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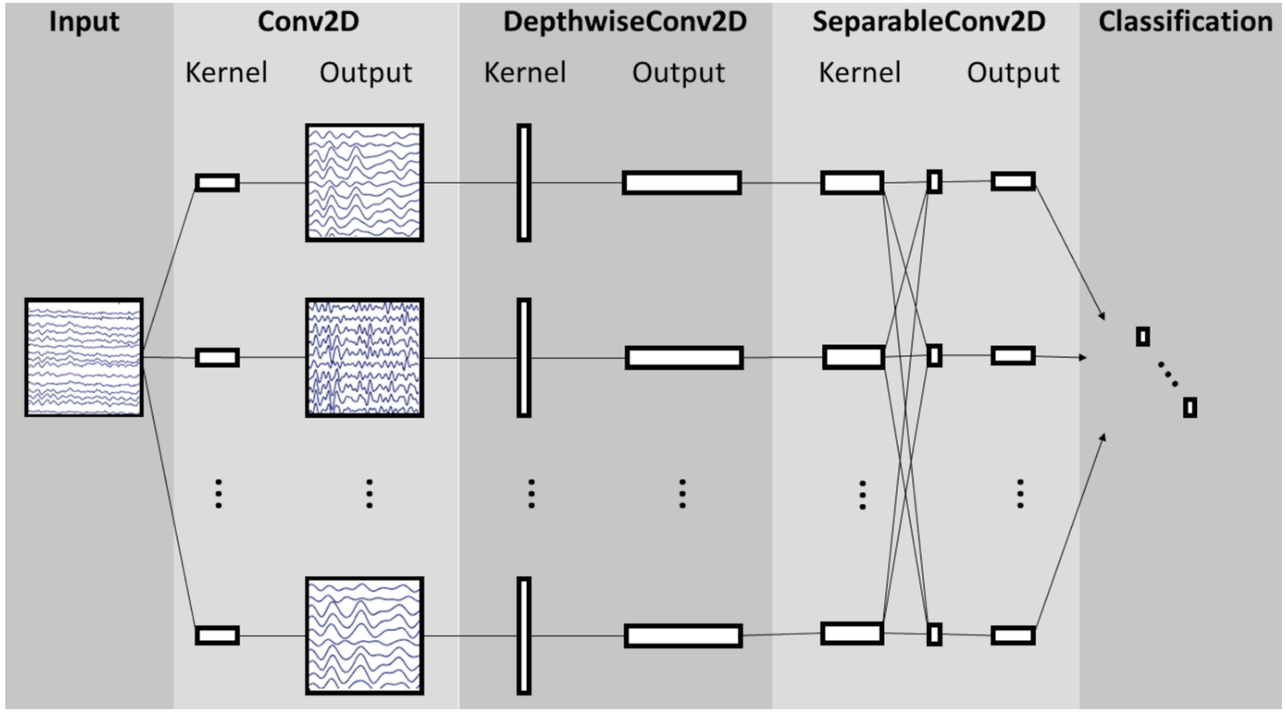

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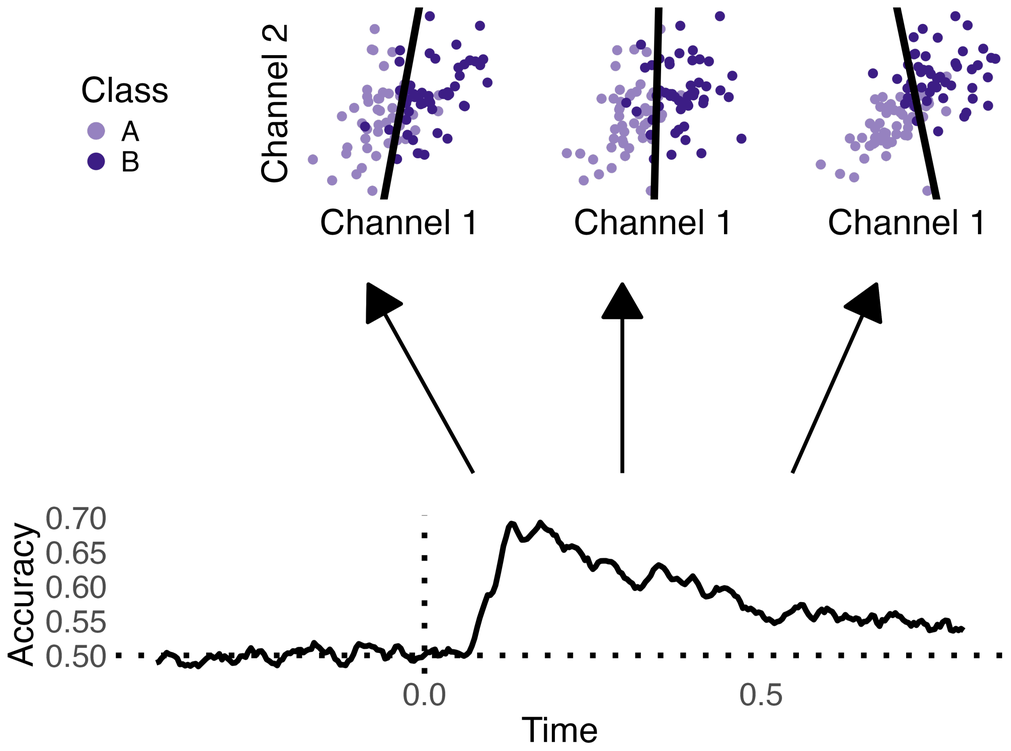
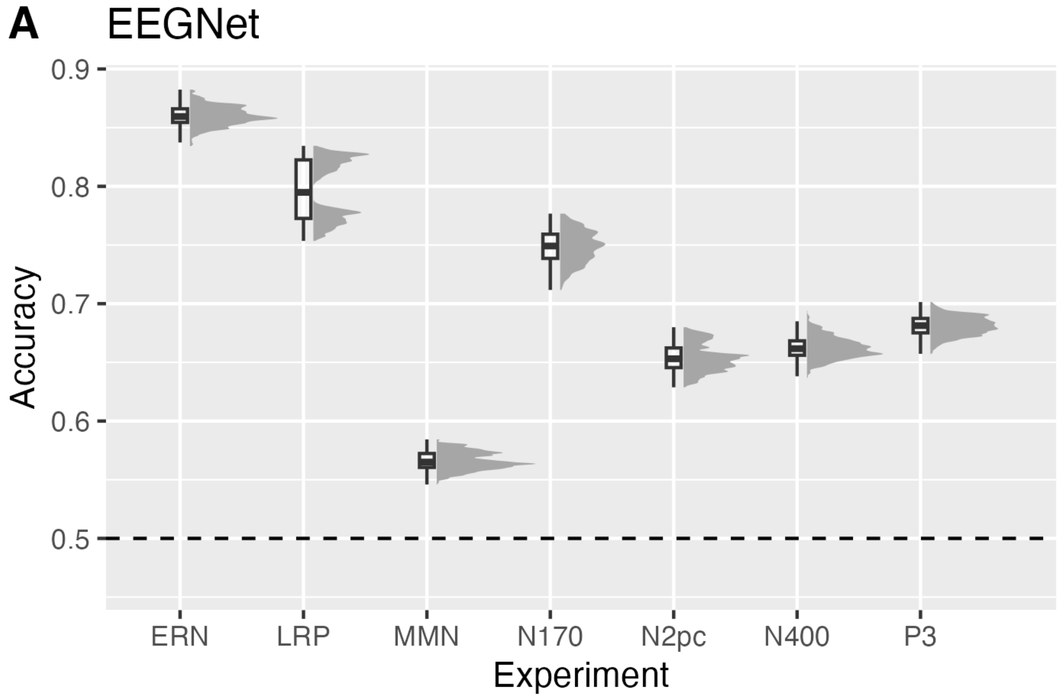
Time-resolved (Logistic Regression)



Decoding accuracies



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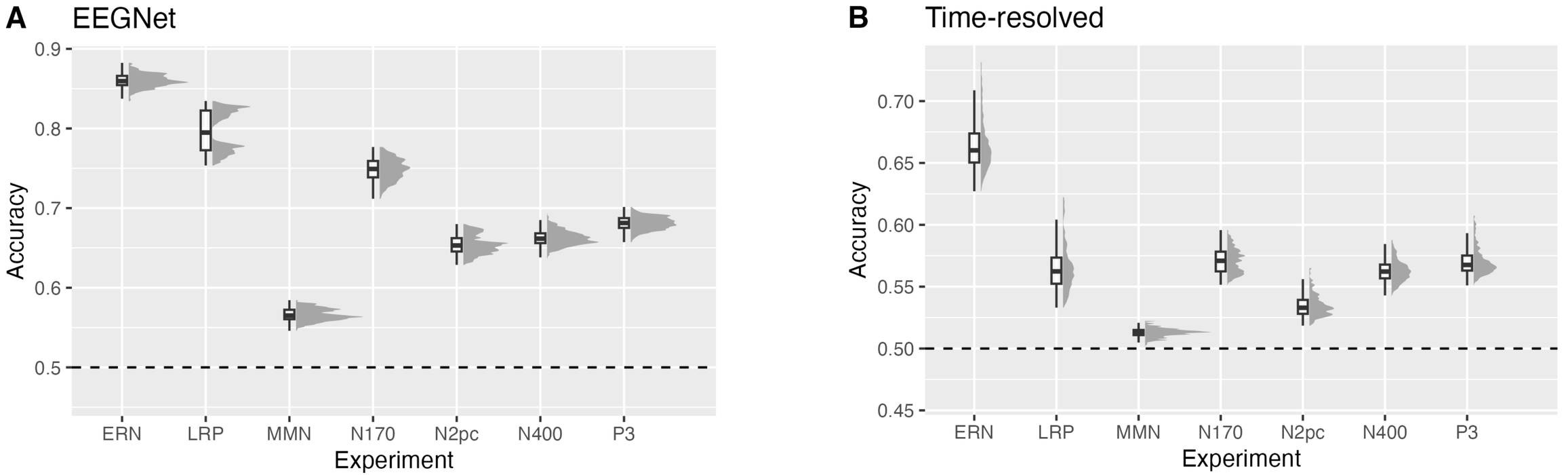

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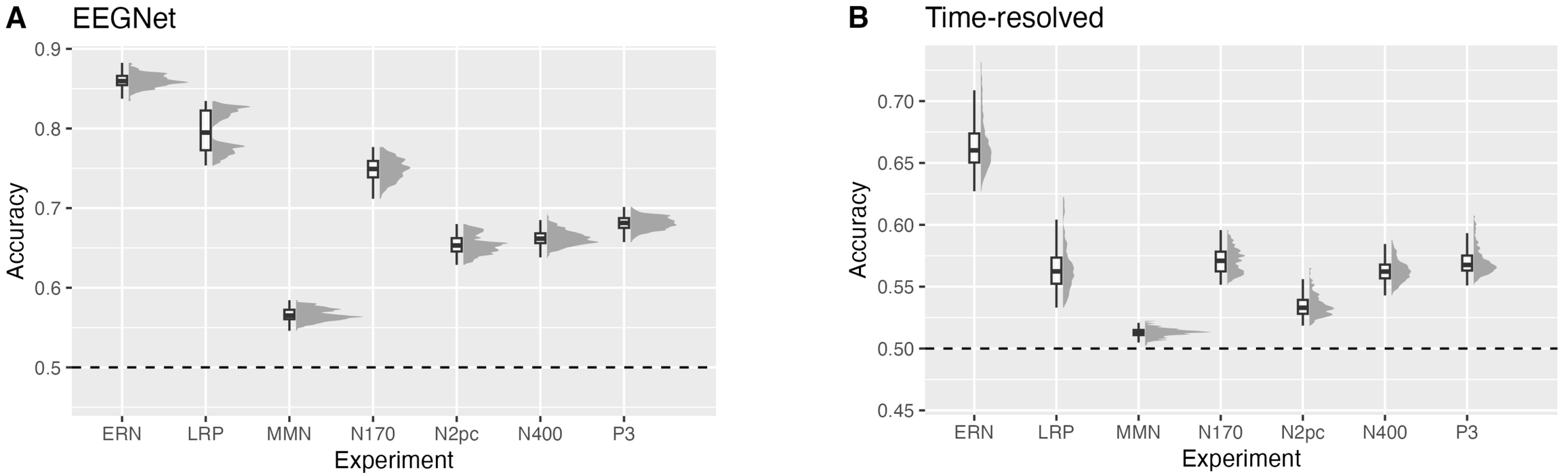
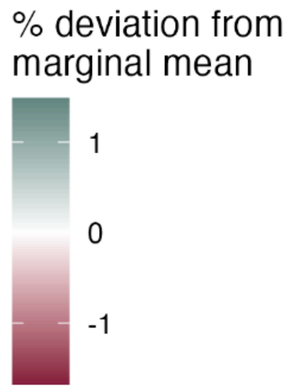


$$\text{accuracy} \sim 1 + \text{step}_1 + \text{step}_2 + \text{step}_1 * \text{step}_2 + \ldots + (1 + \text{step}_1 + \text{step}_2 + \text{step}_1 * \text{step}_2 + \ldots | \text{participant})$$

Which steps enhance decoding accuracy?

main effects - EEGNet



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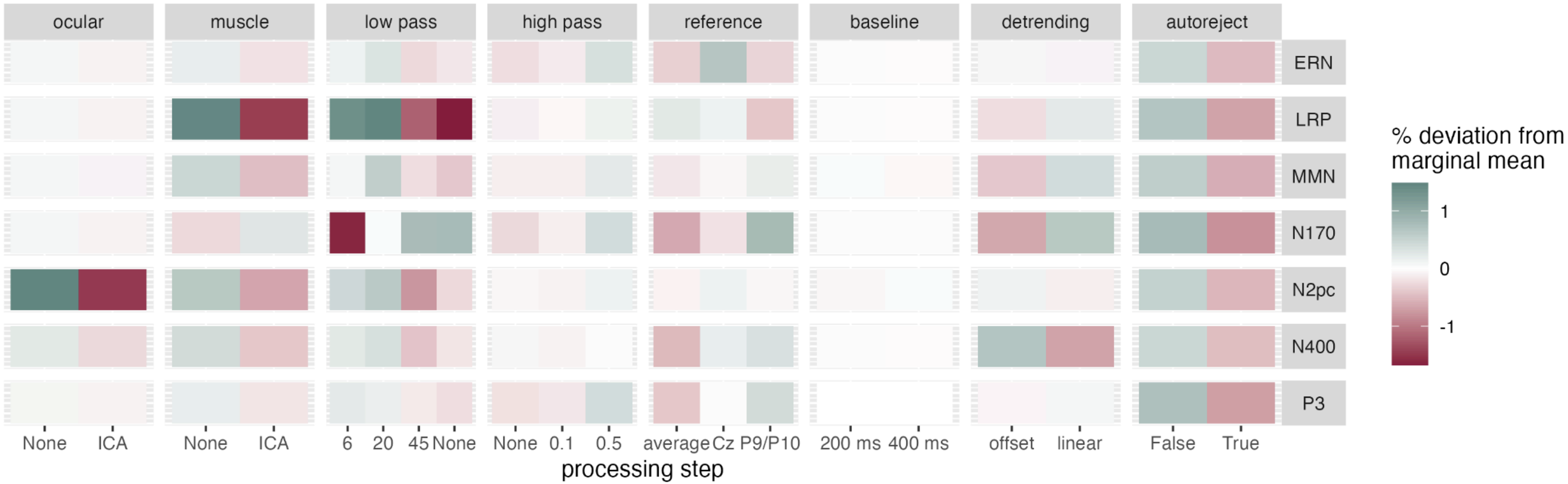
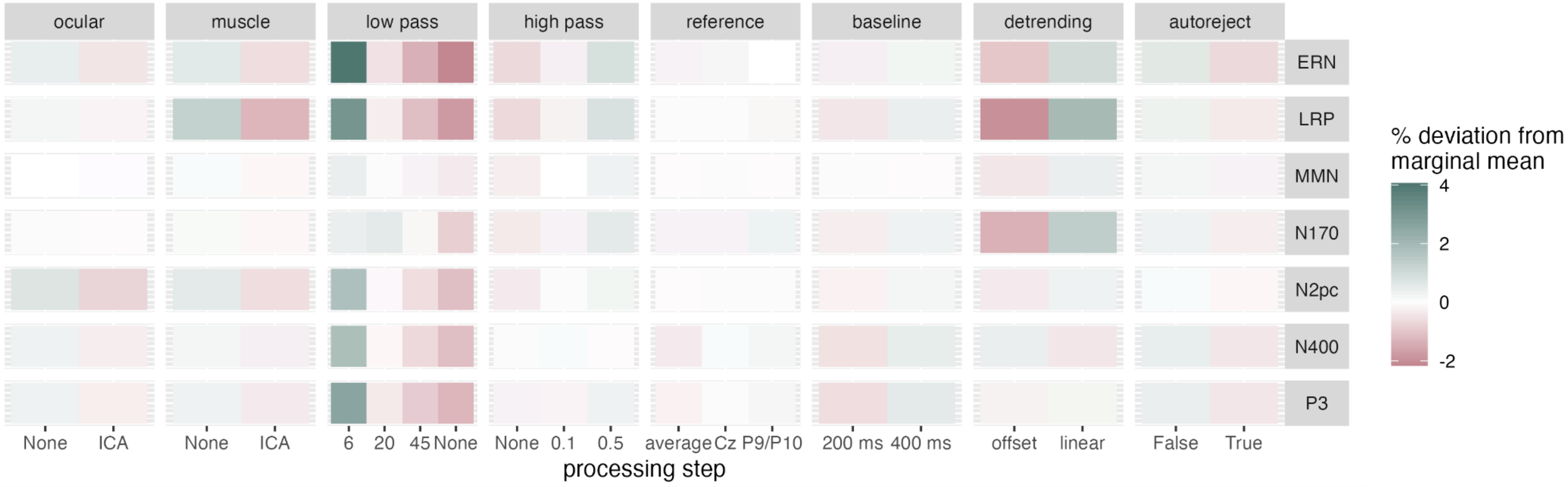


Which steps enhance decoding accuracy?

main effects - Time-resolved decoding



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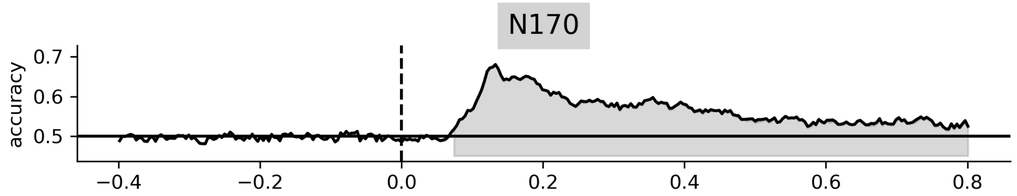

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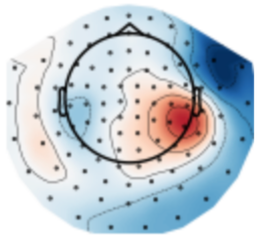

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Comments & questions:
write me!
rkesslerx@gmail.com

Visit my poster: Friday 16:30-18:00

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