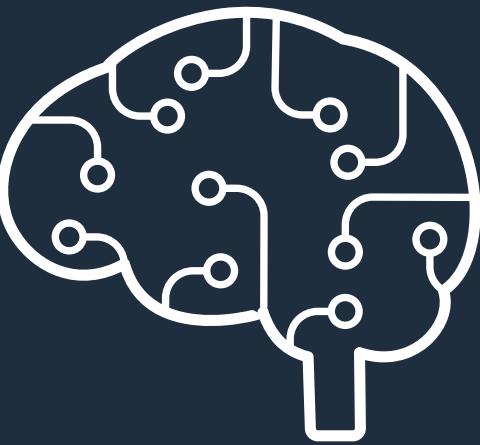
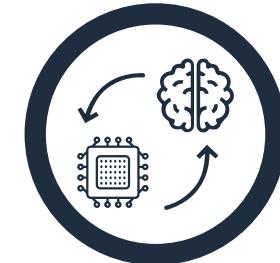


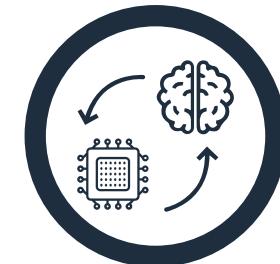
# Outro



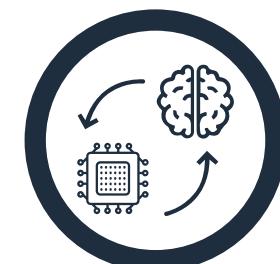
# Outline



Wrap-up

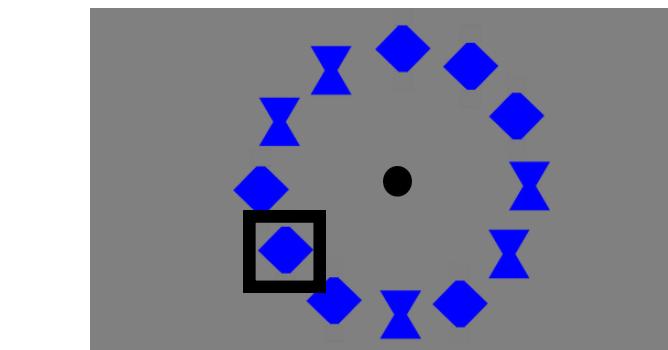
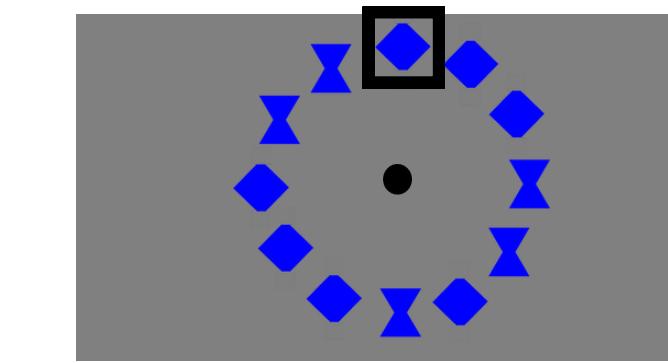
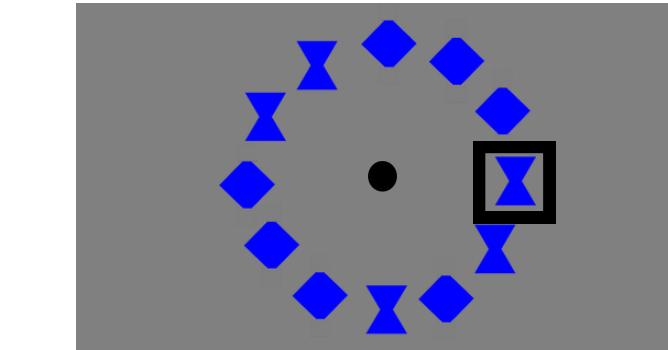
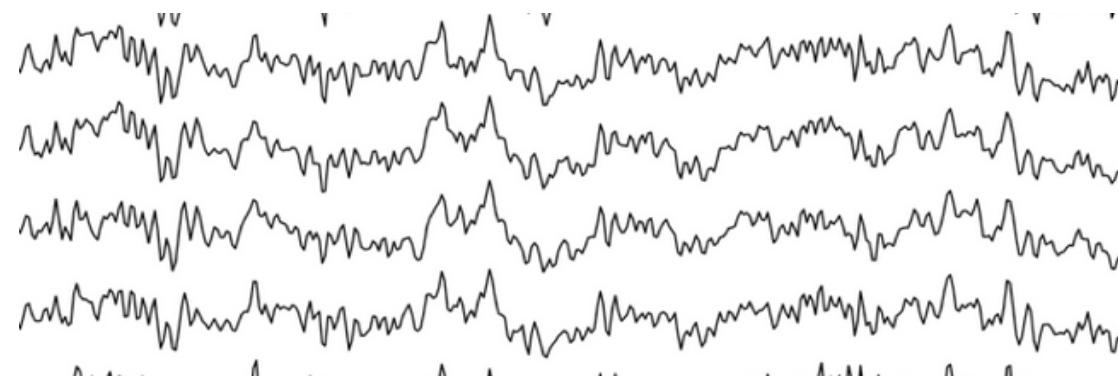
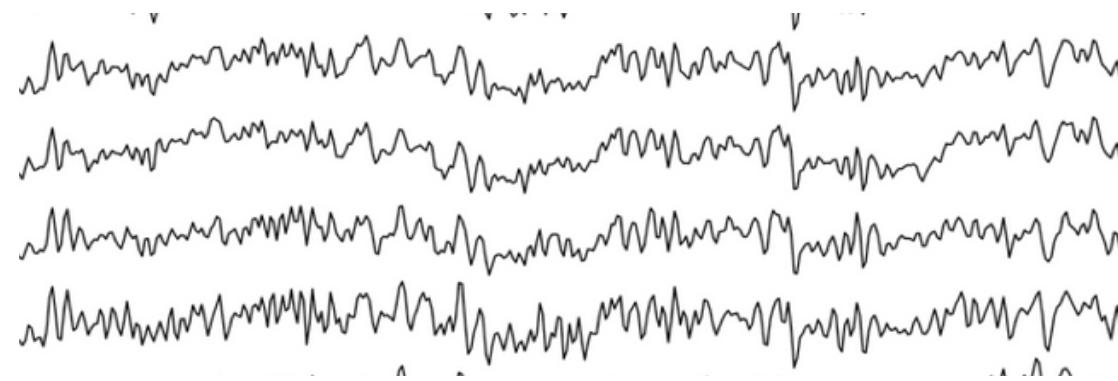
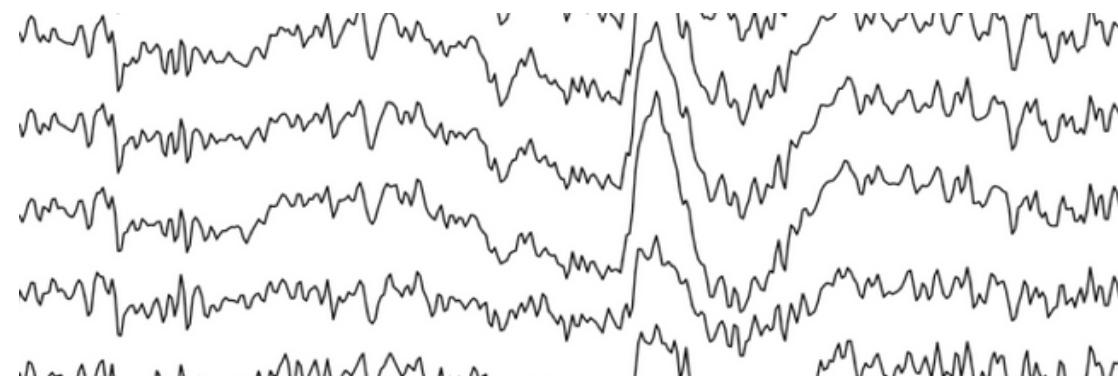


Result & Discussion



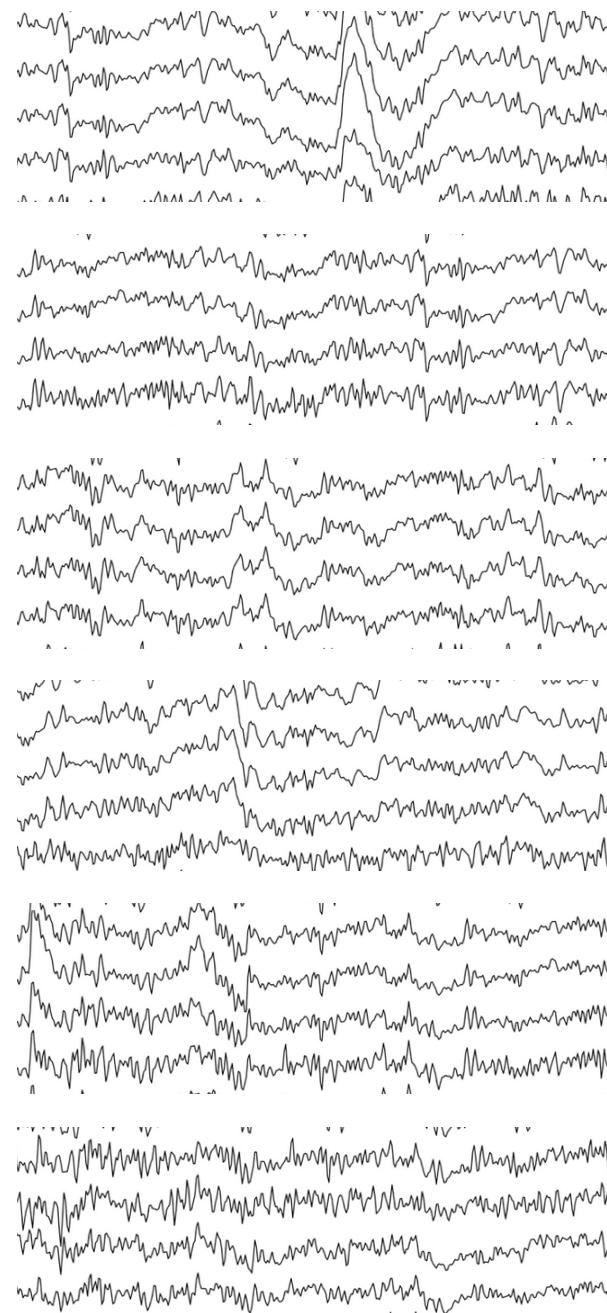
Application

# Data collection

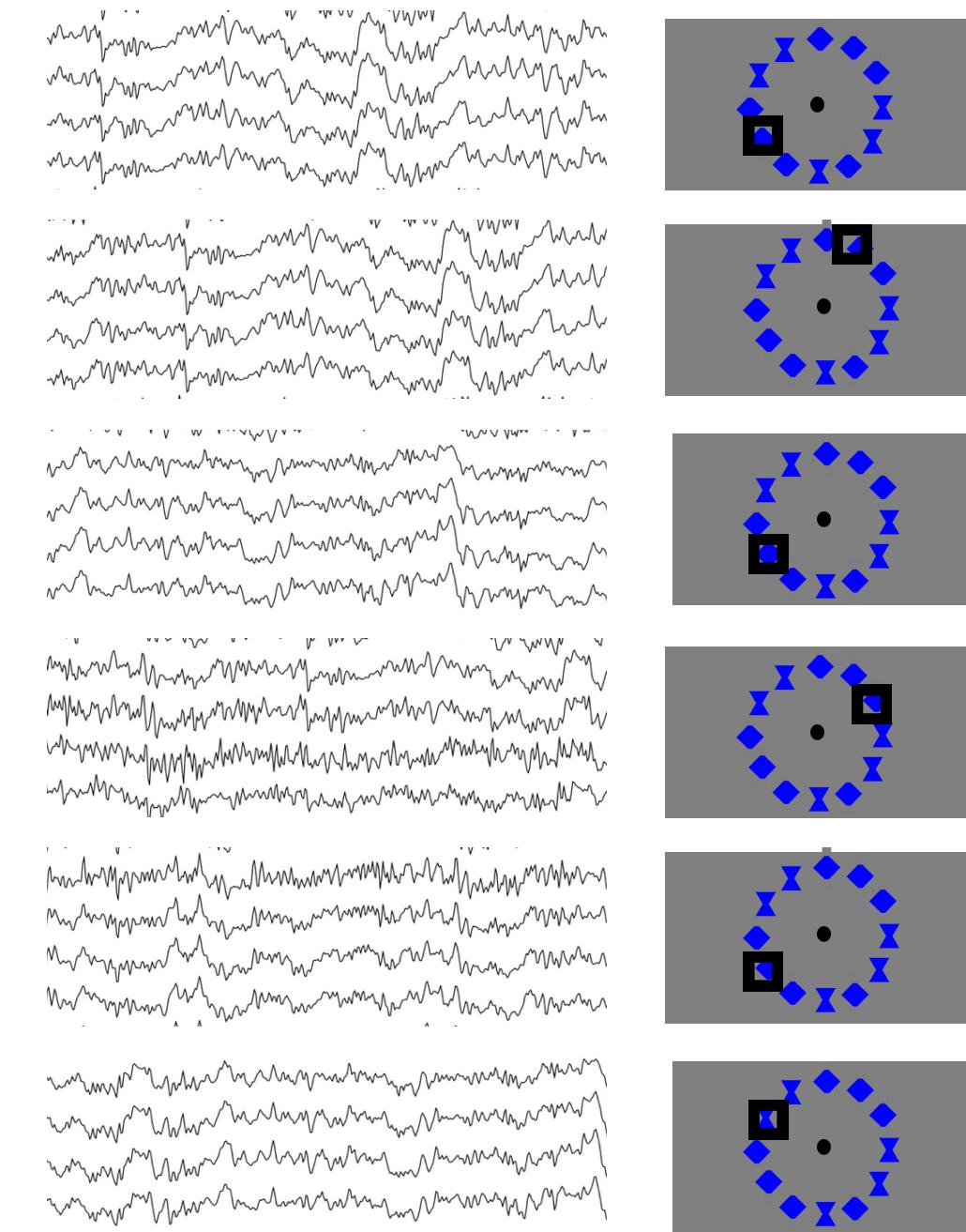


# Train-test split

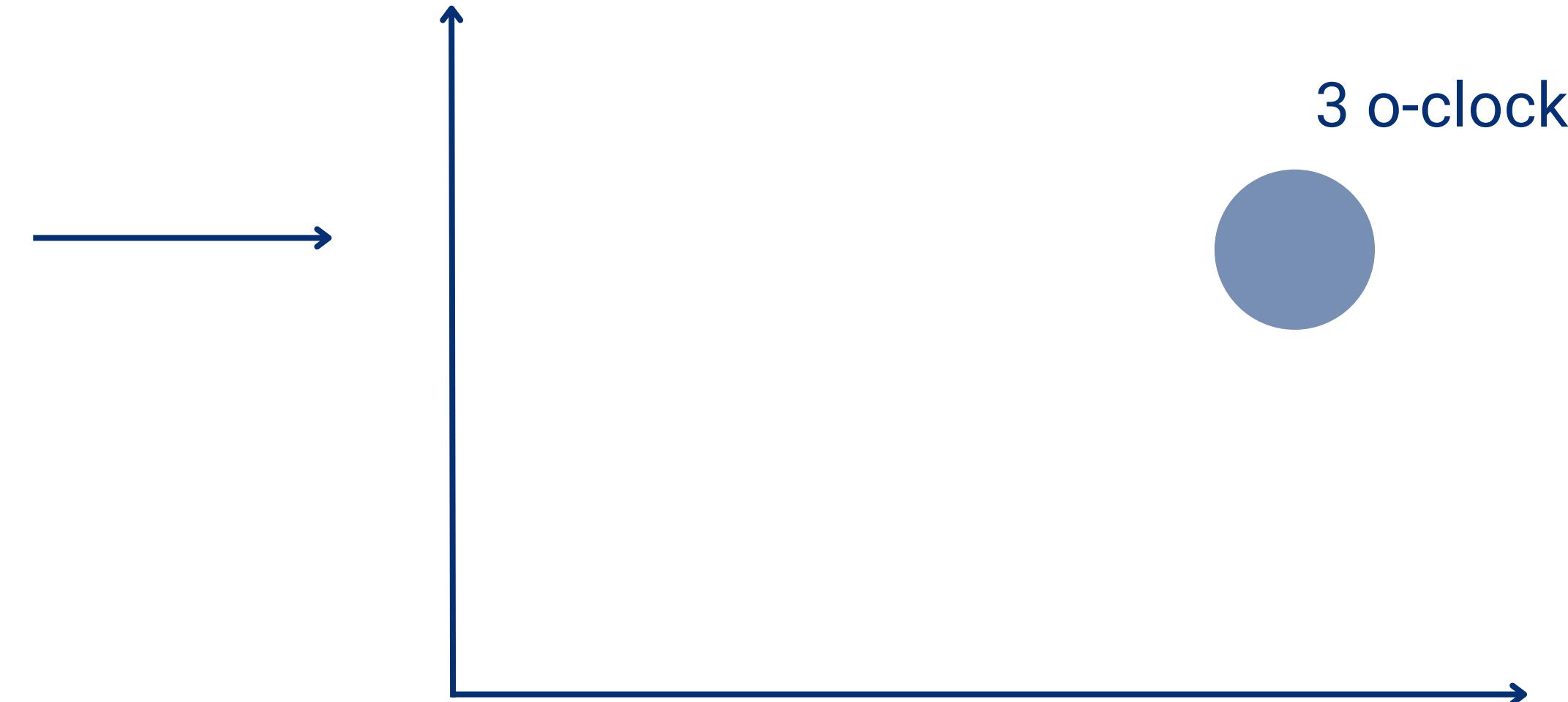
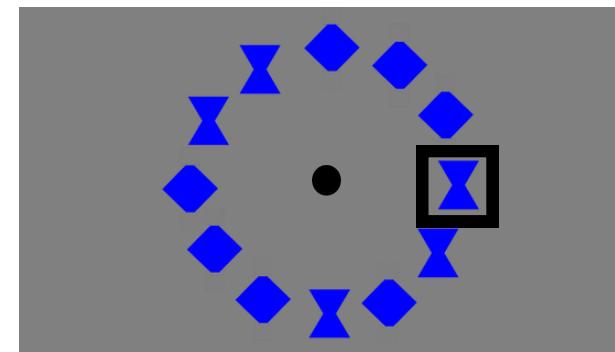
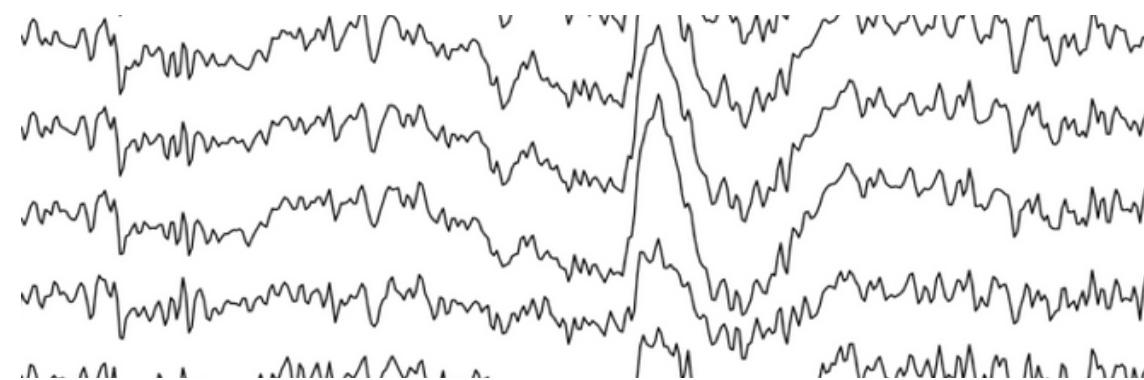
Train



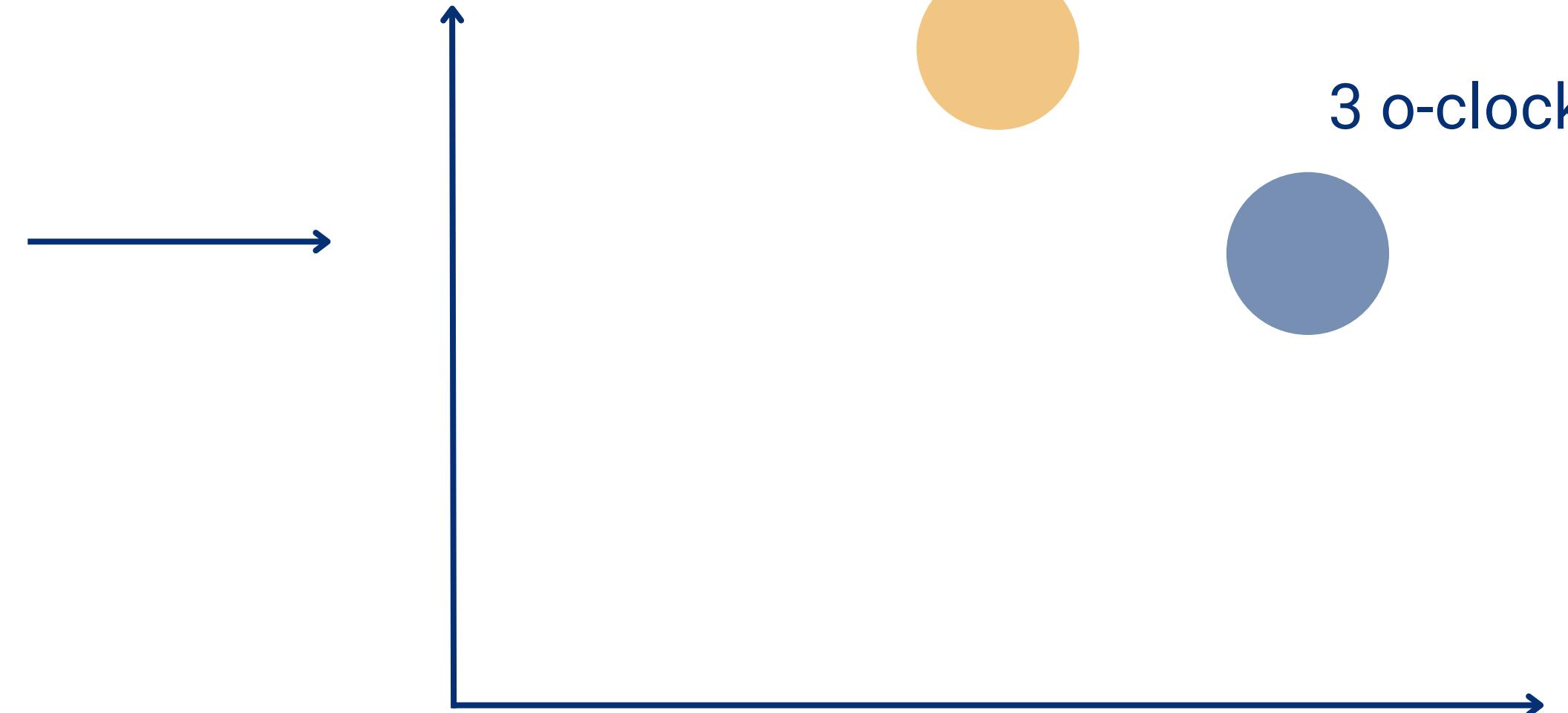
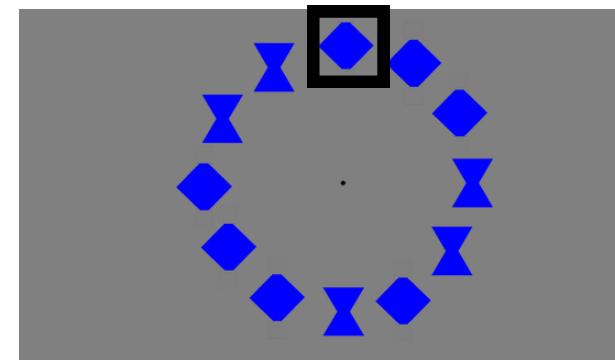
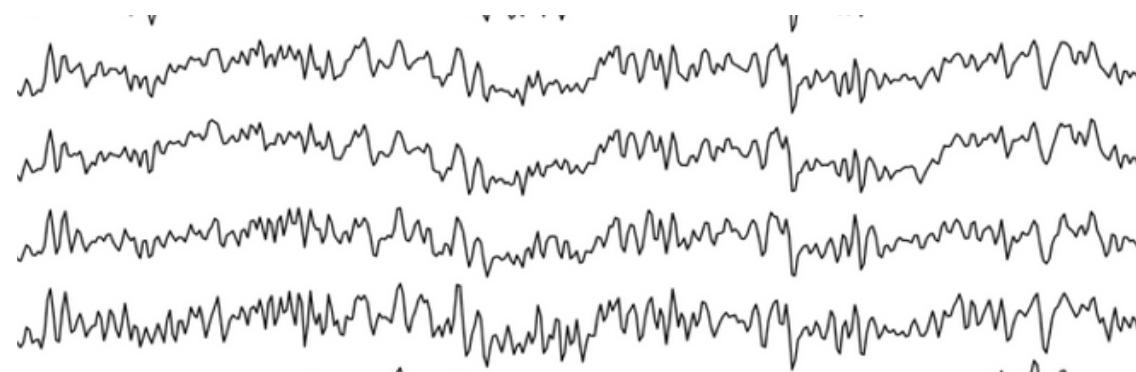
Test



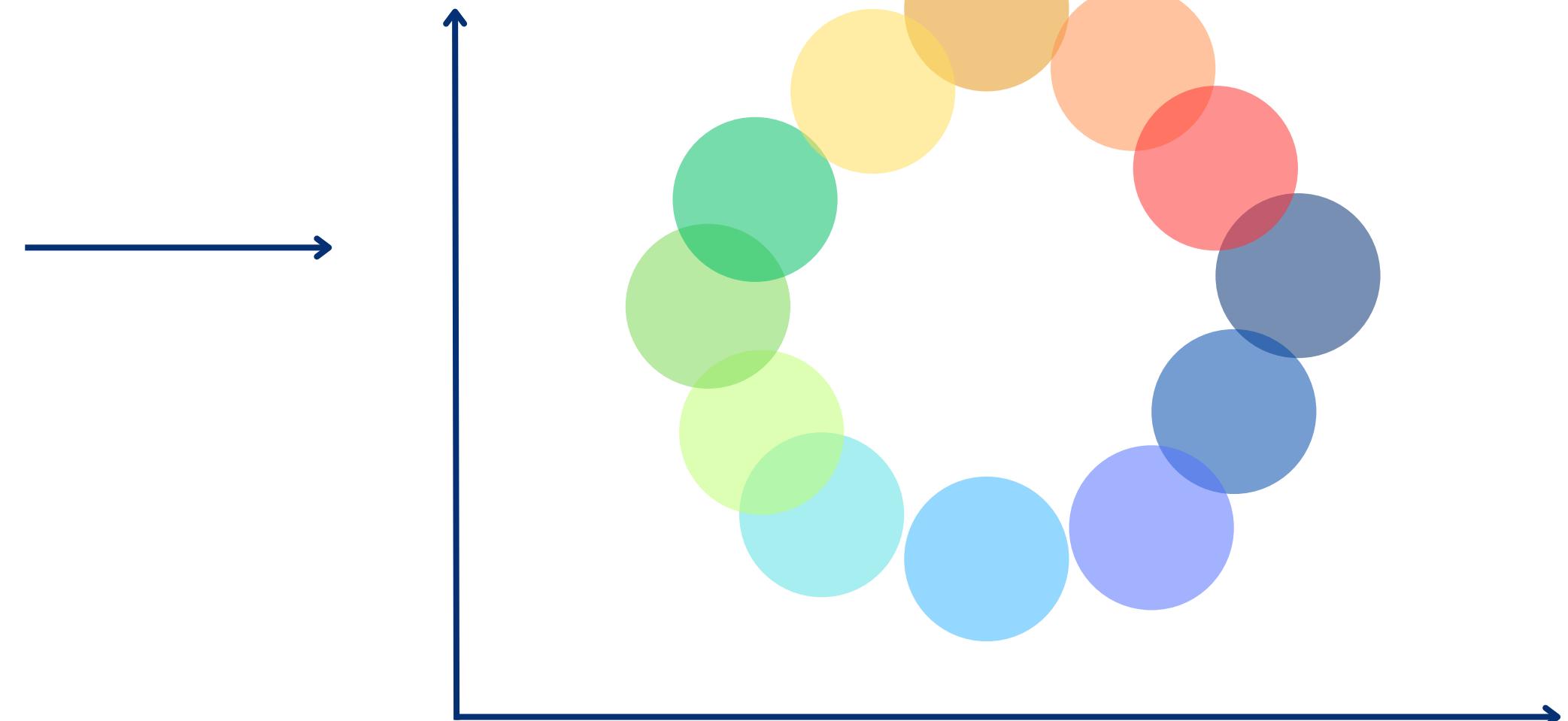
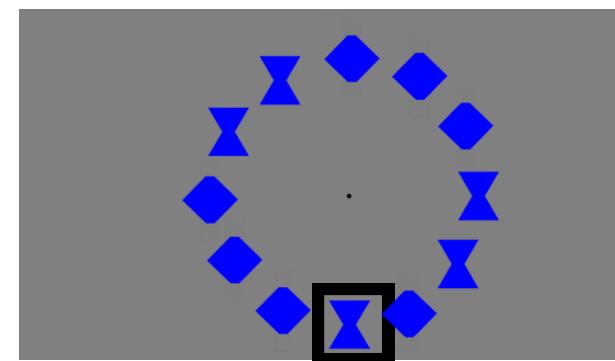
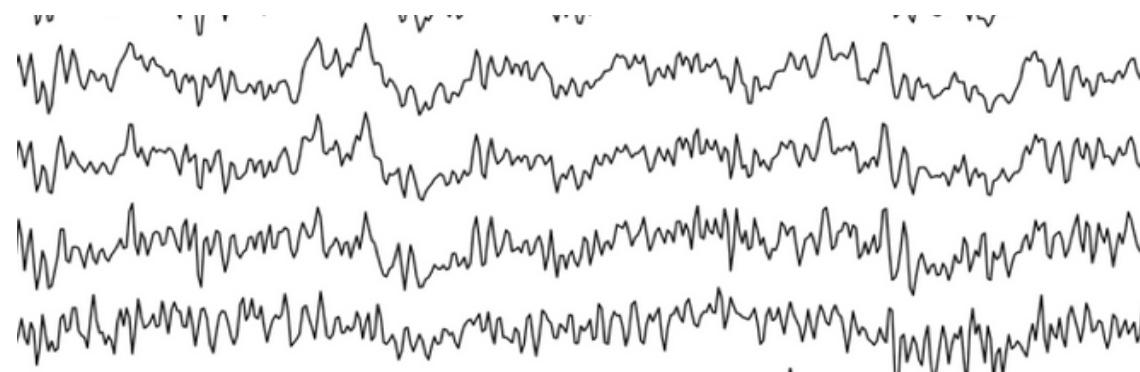
# Training

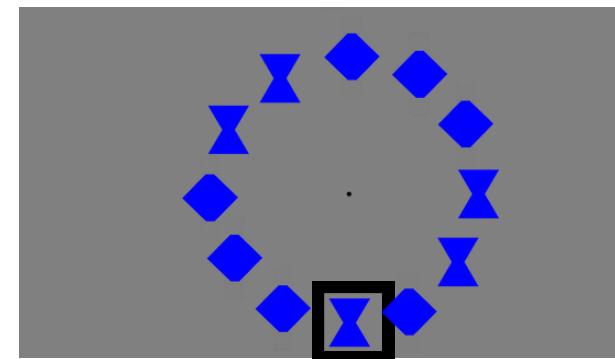
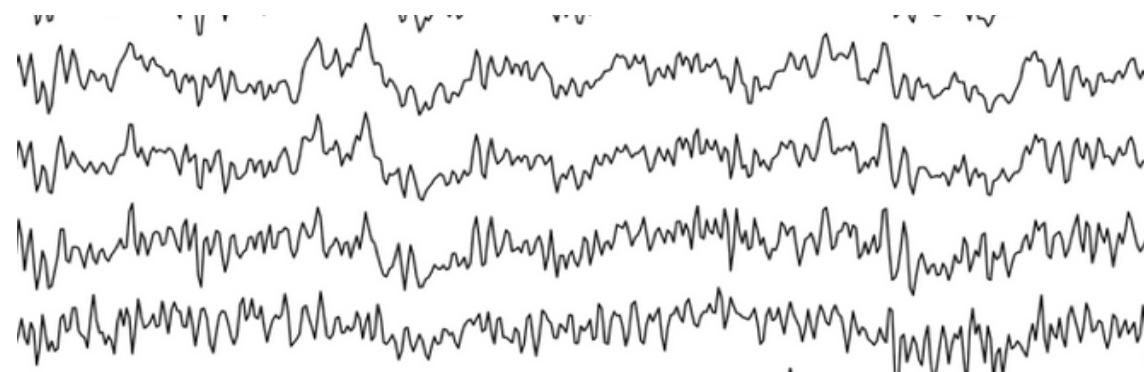


# Training

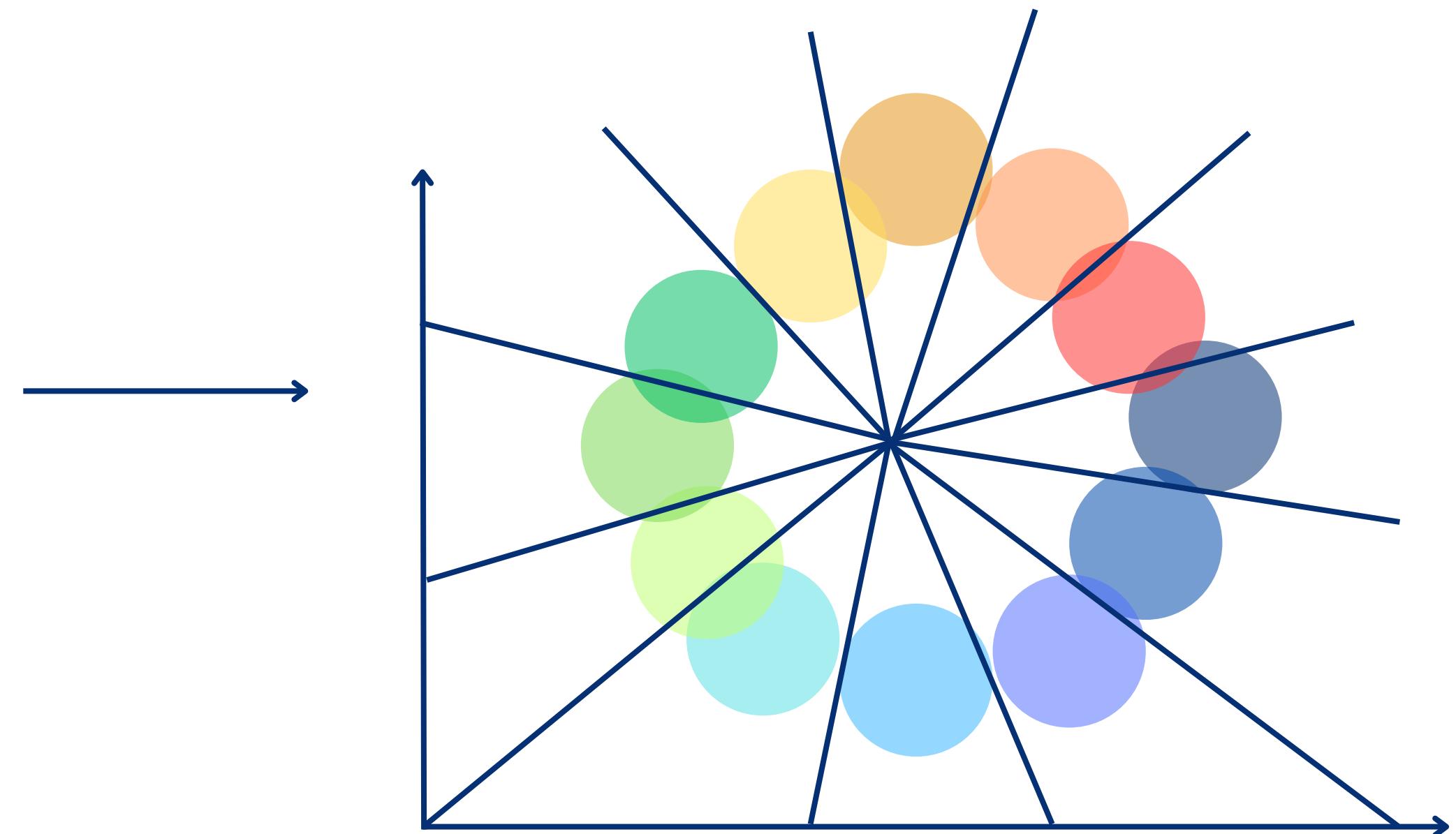


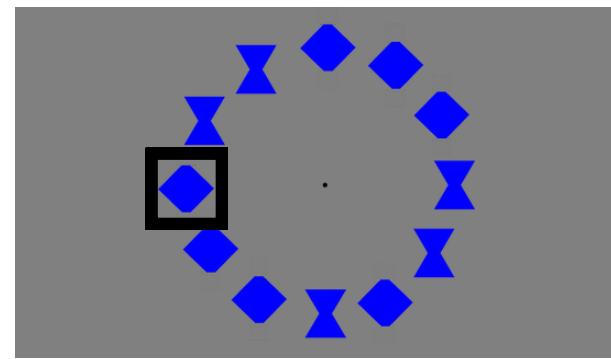
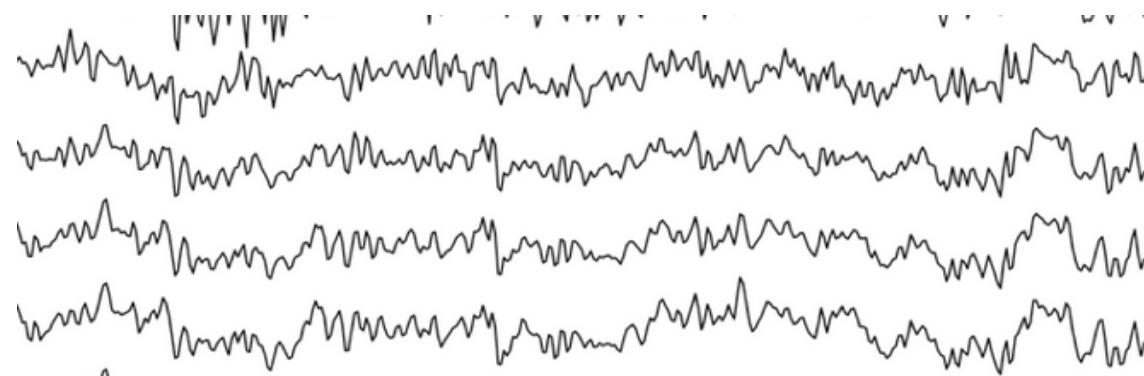
# Training



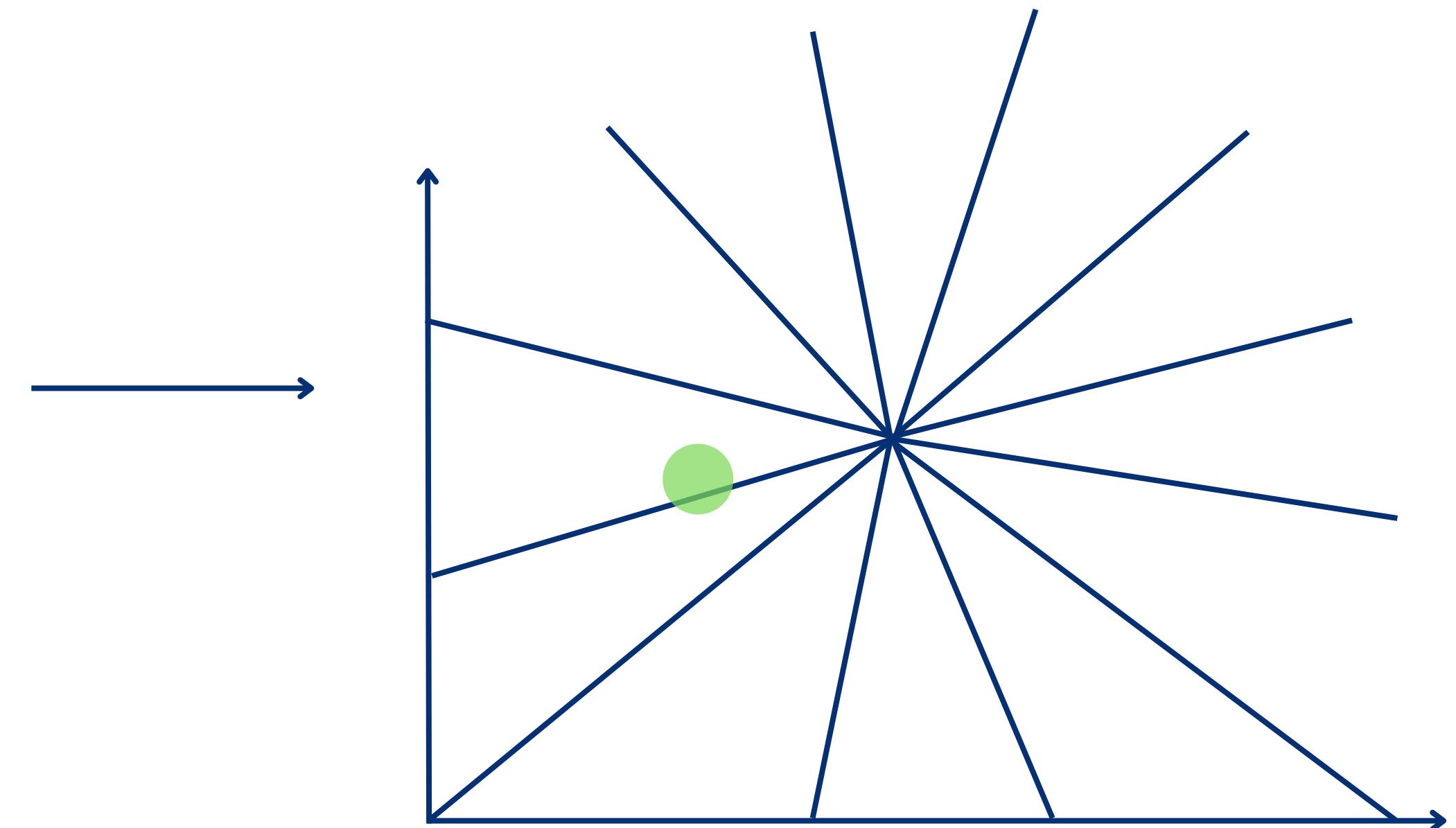


# Training

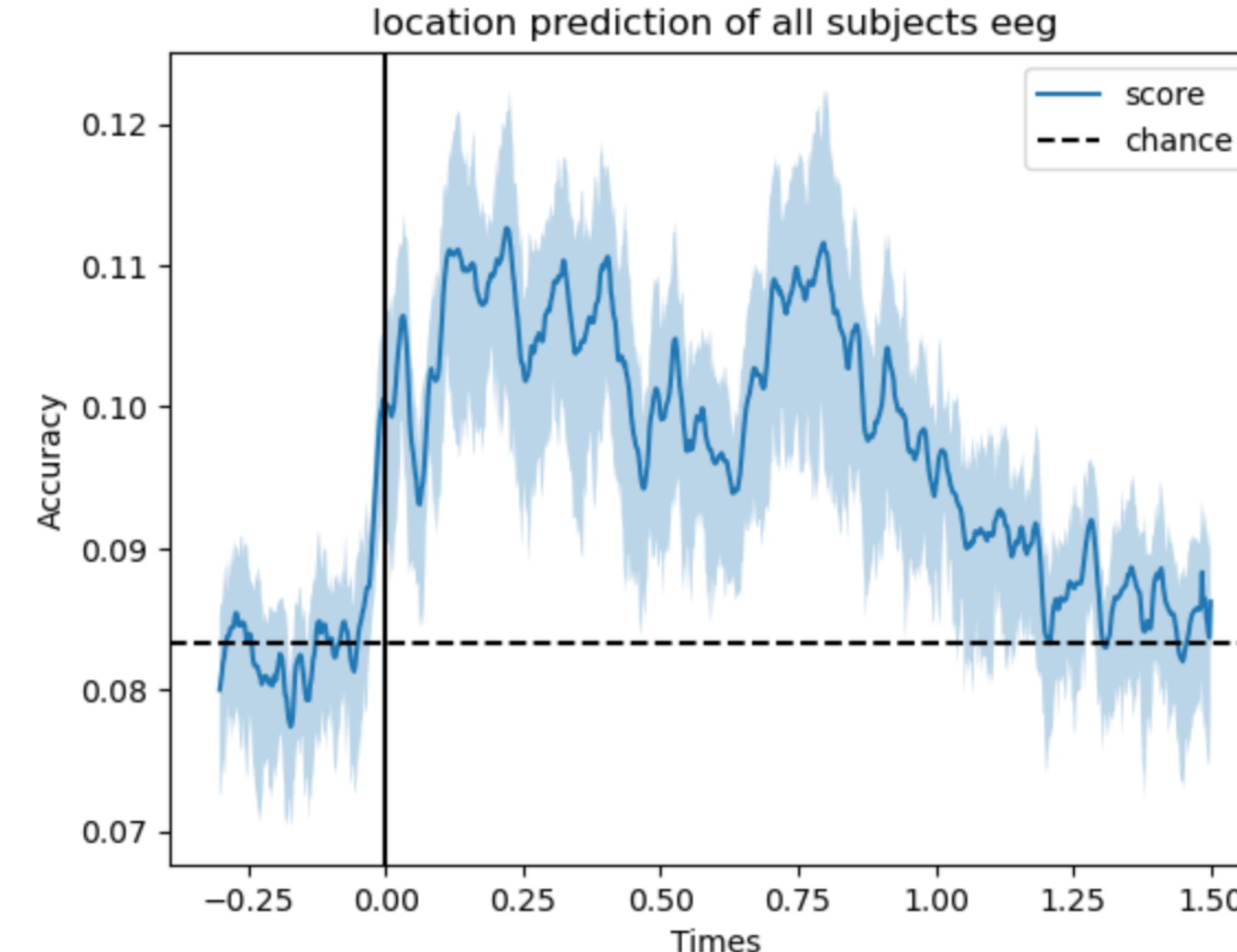


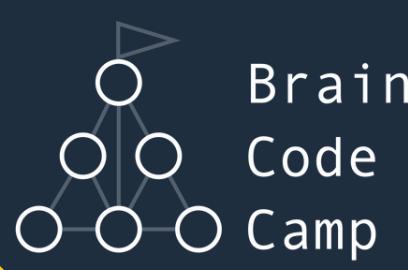


# Testing

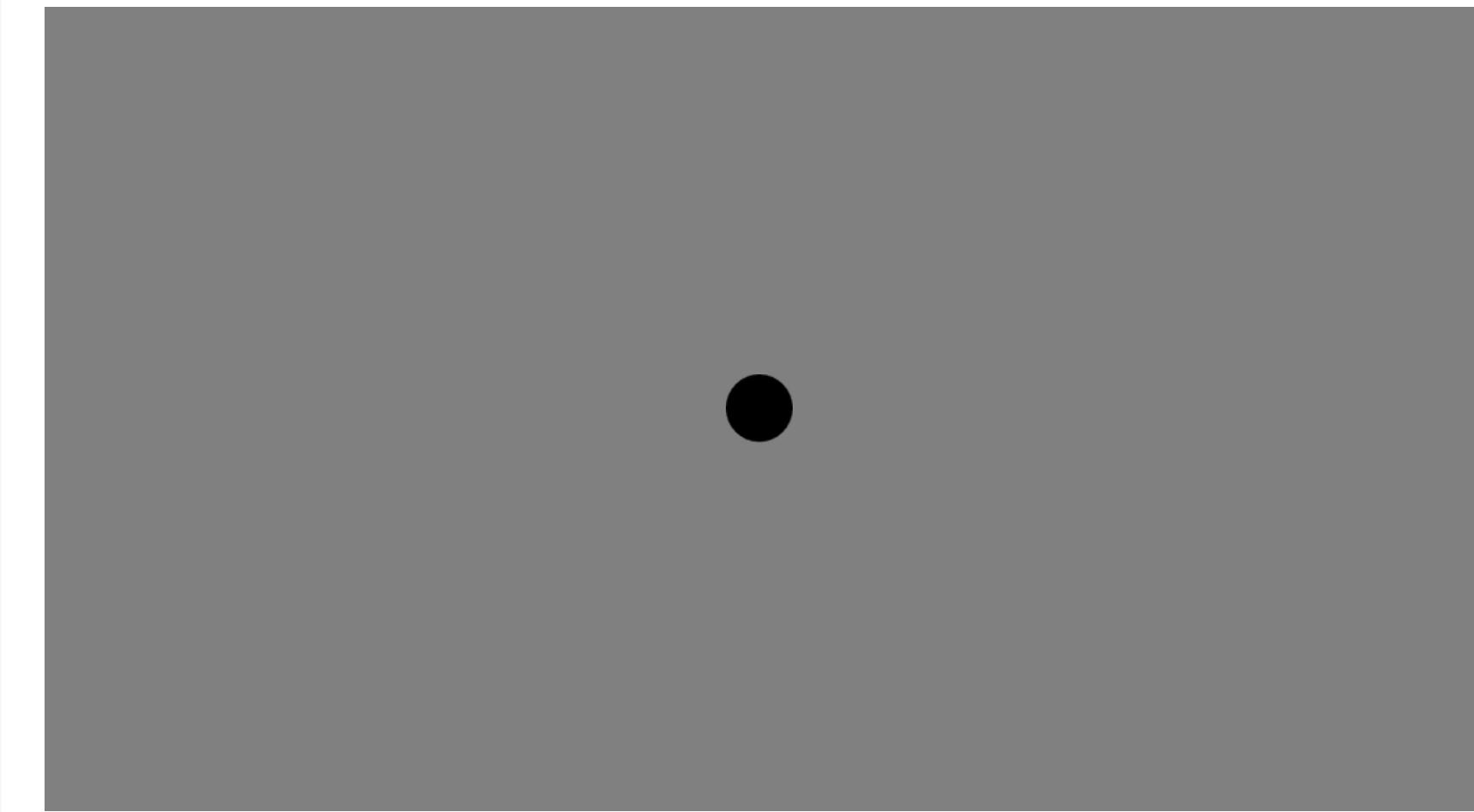
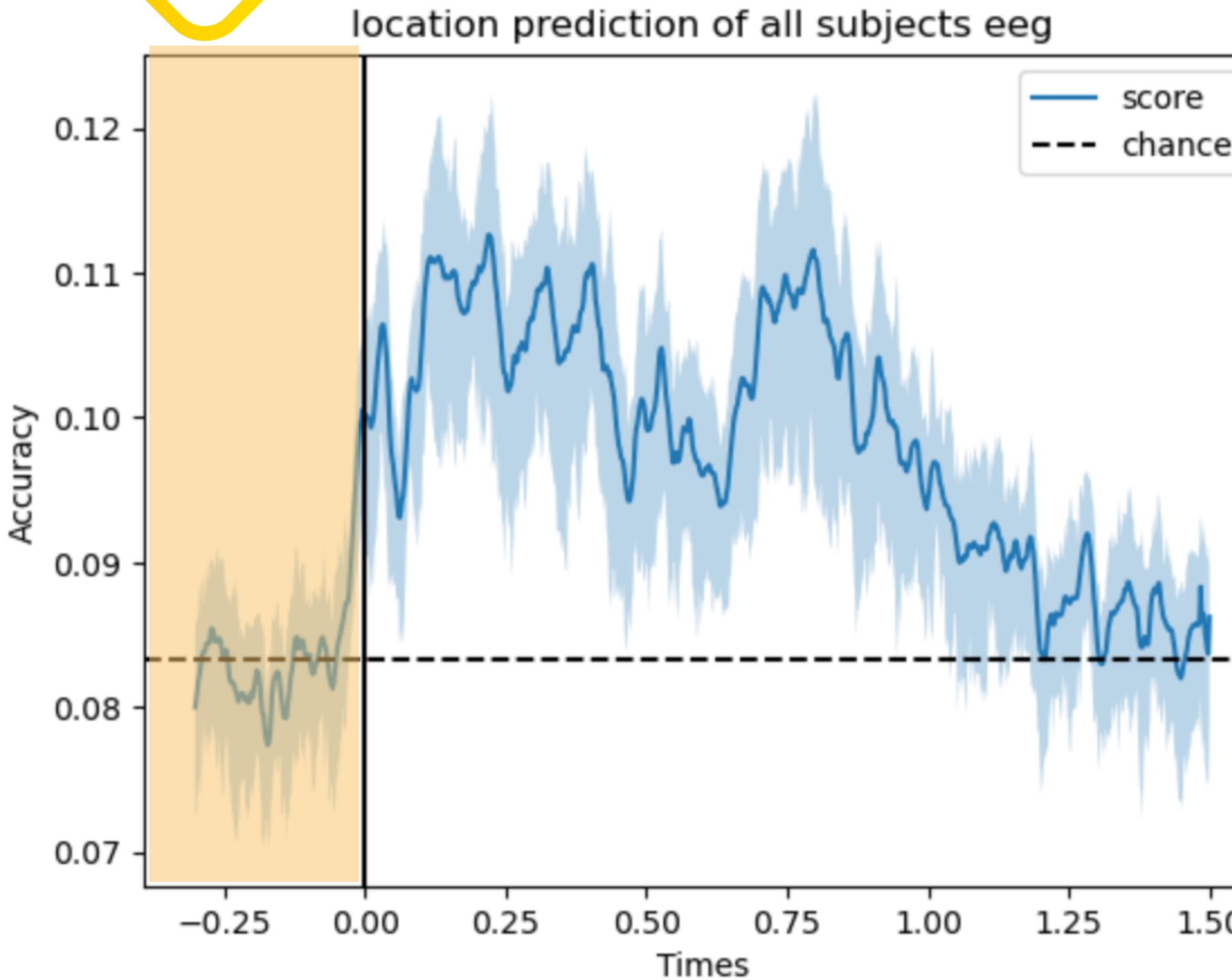


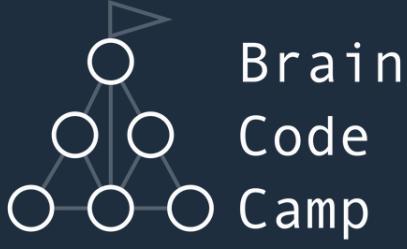
# Result



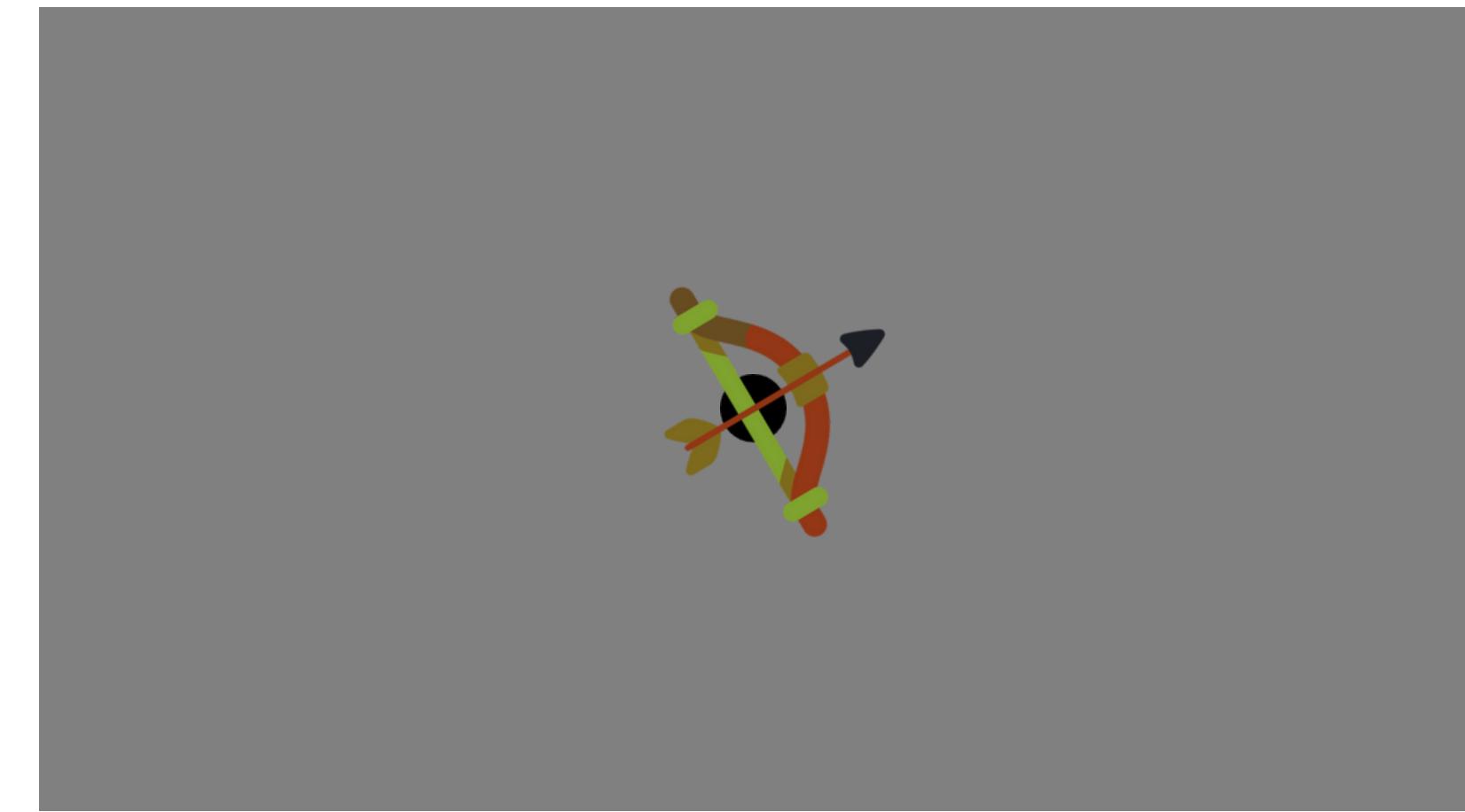
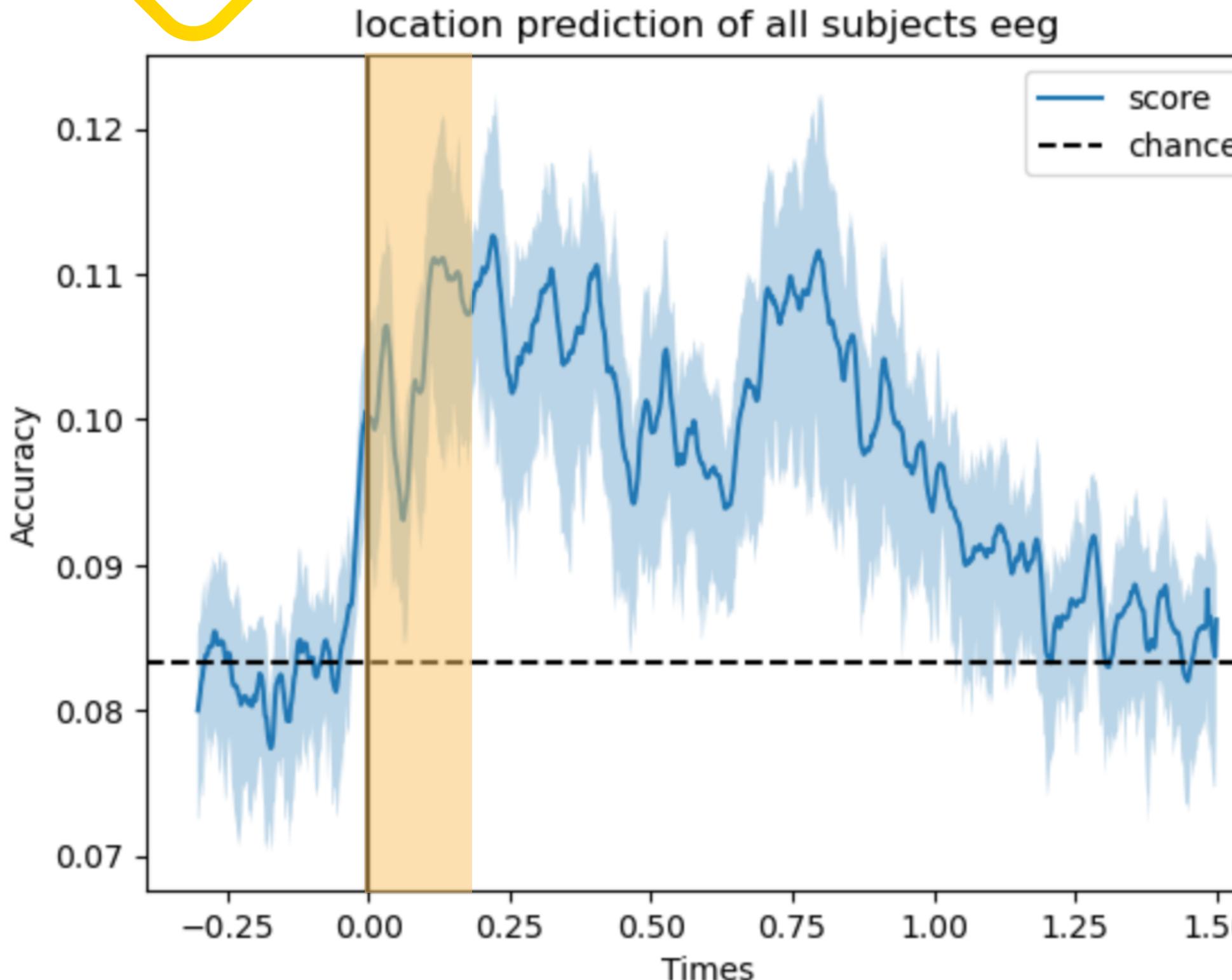


# Result

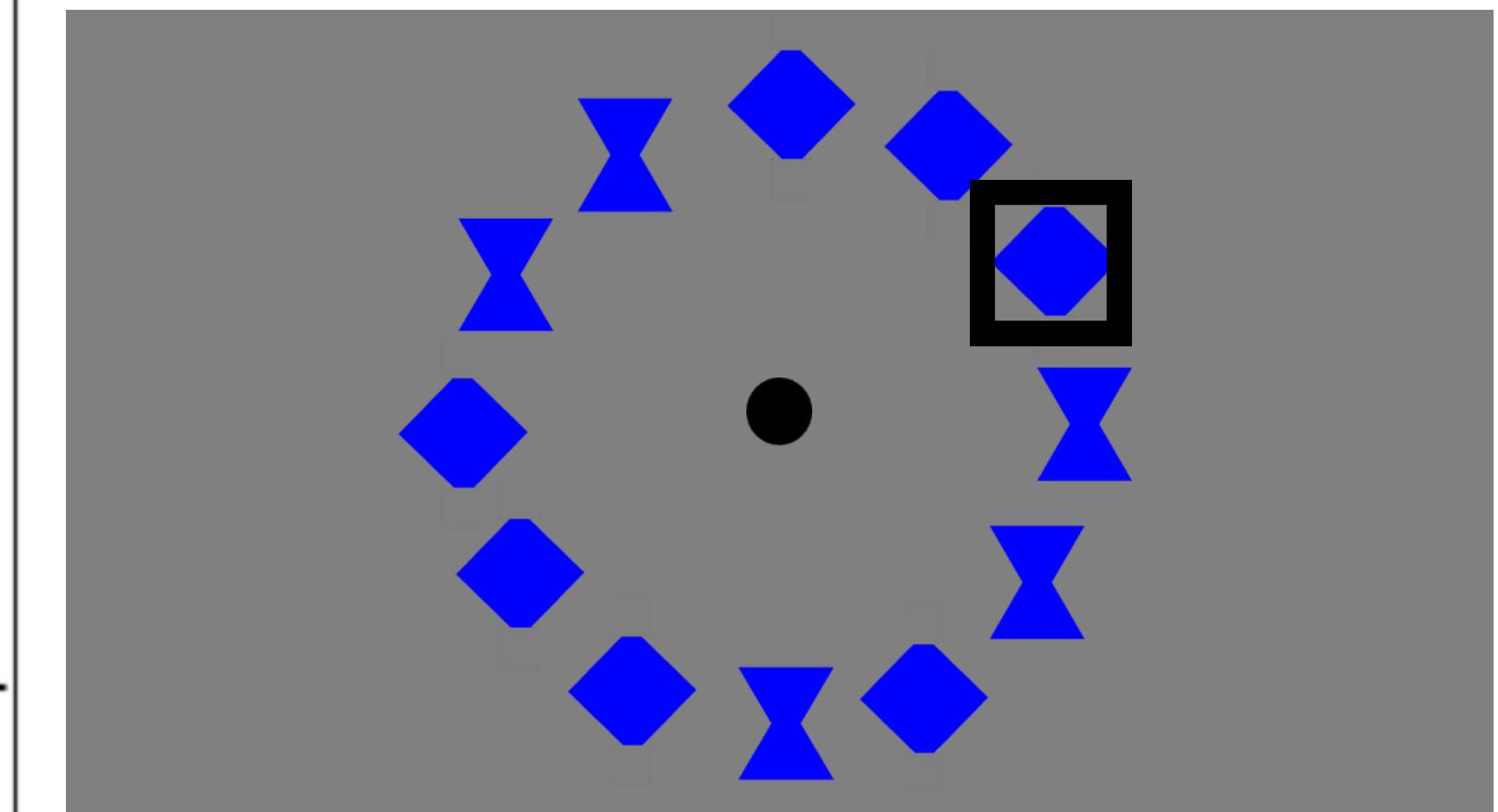
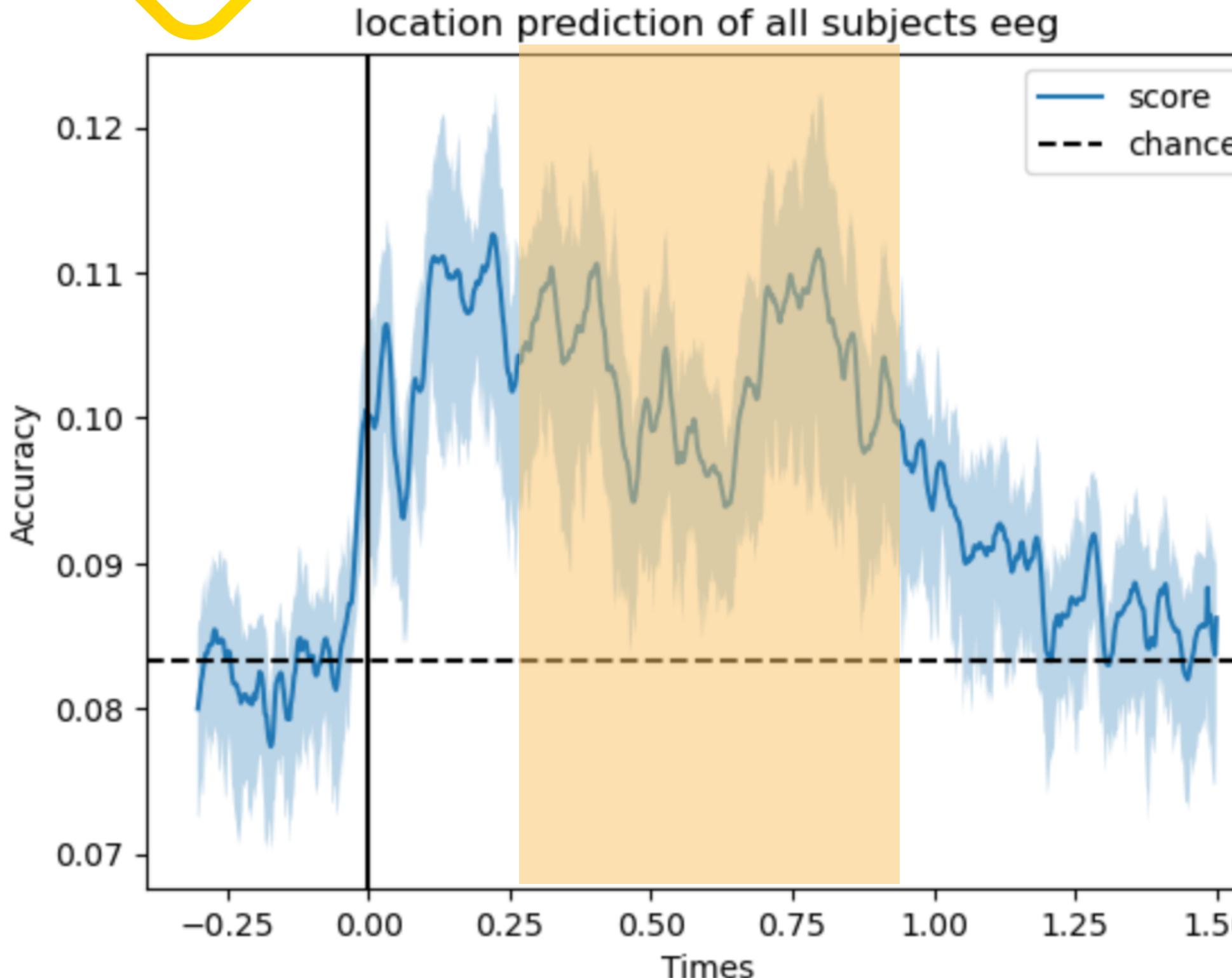


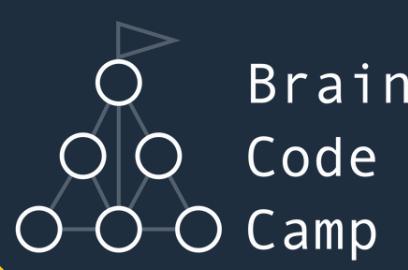


# Result

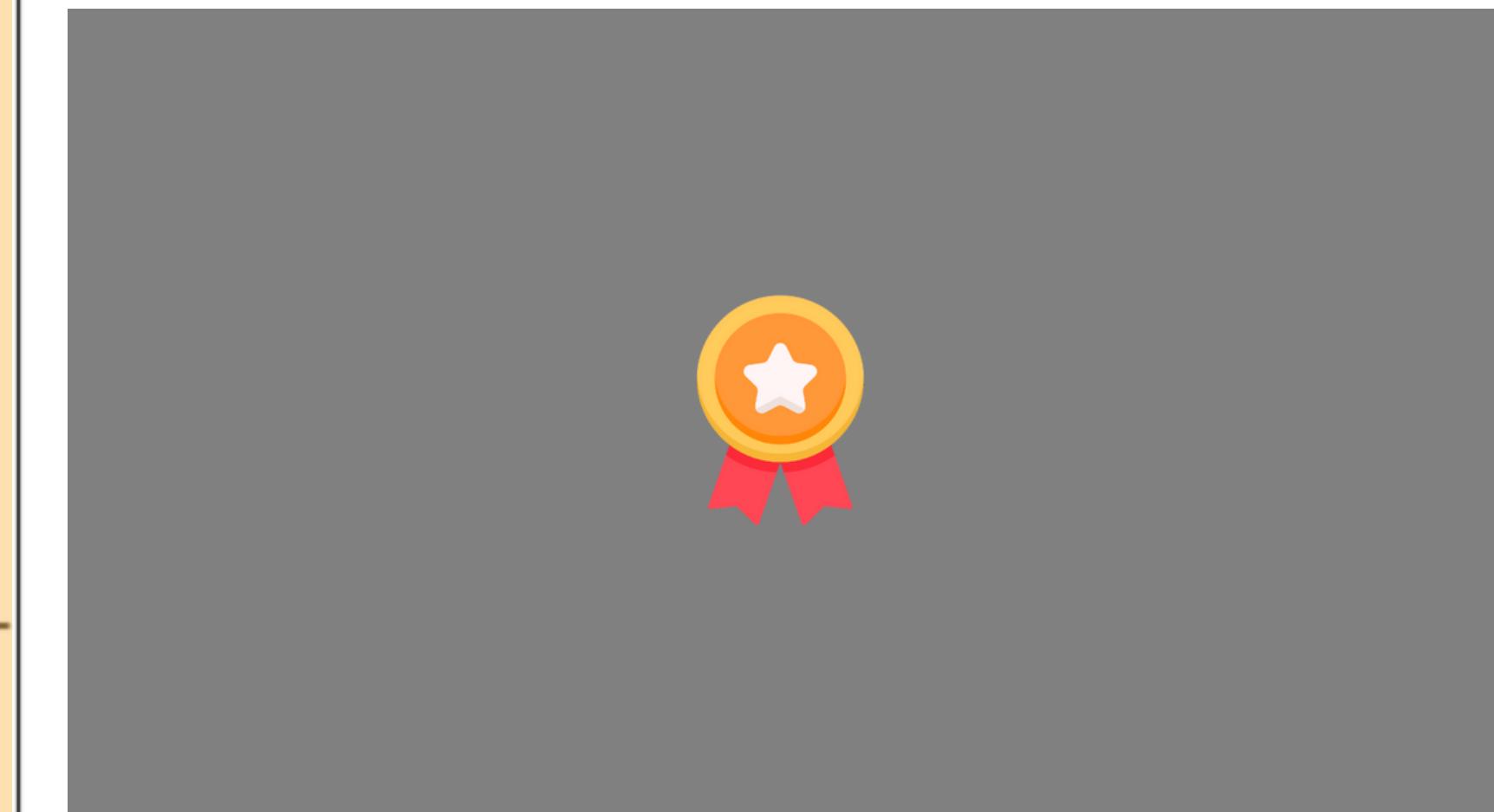
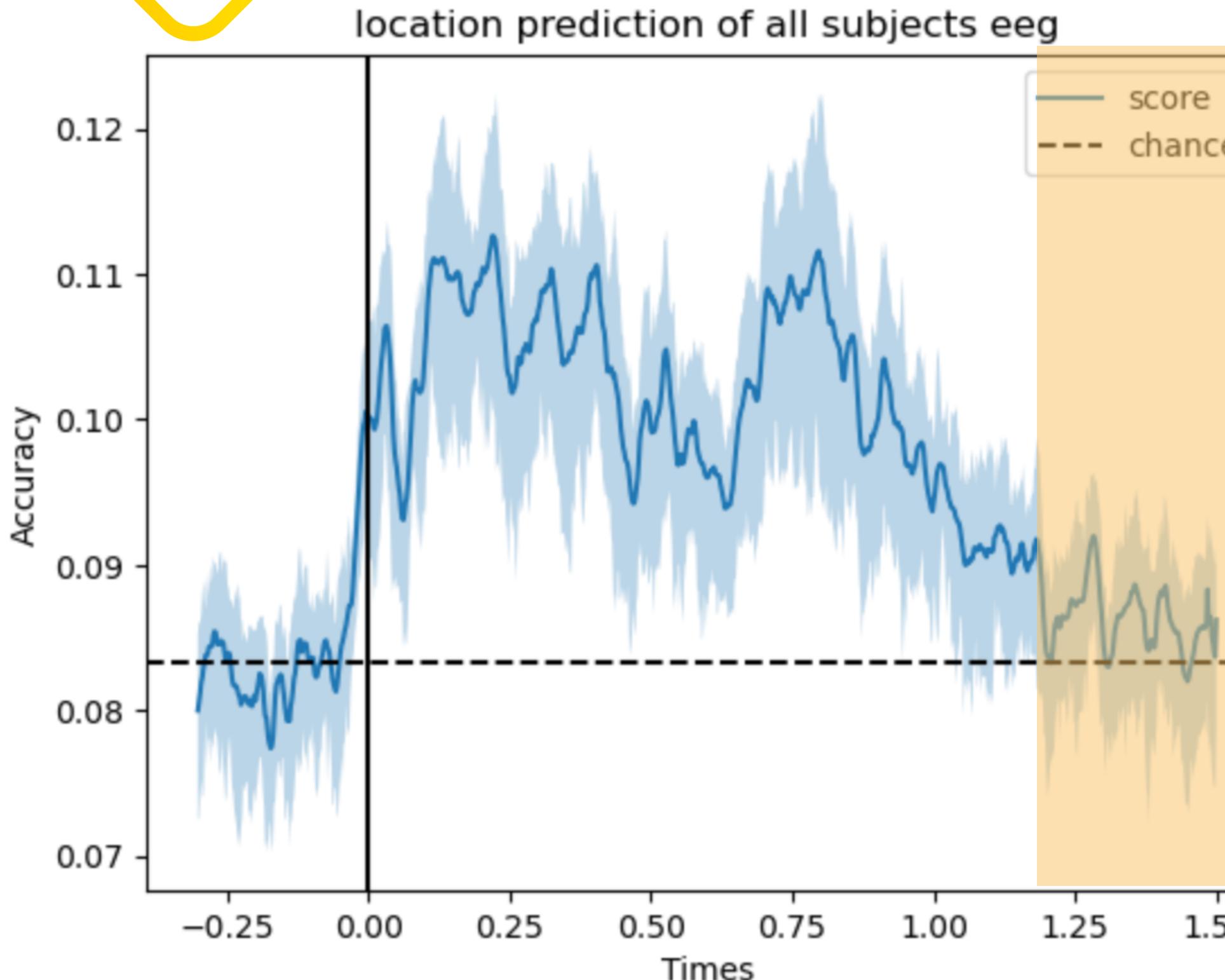


# Result

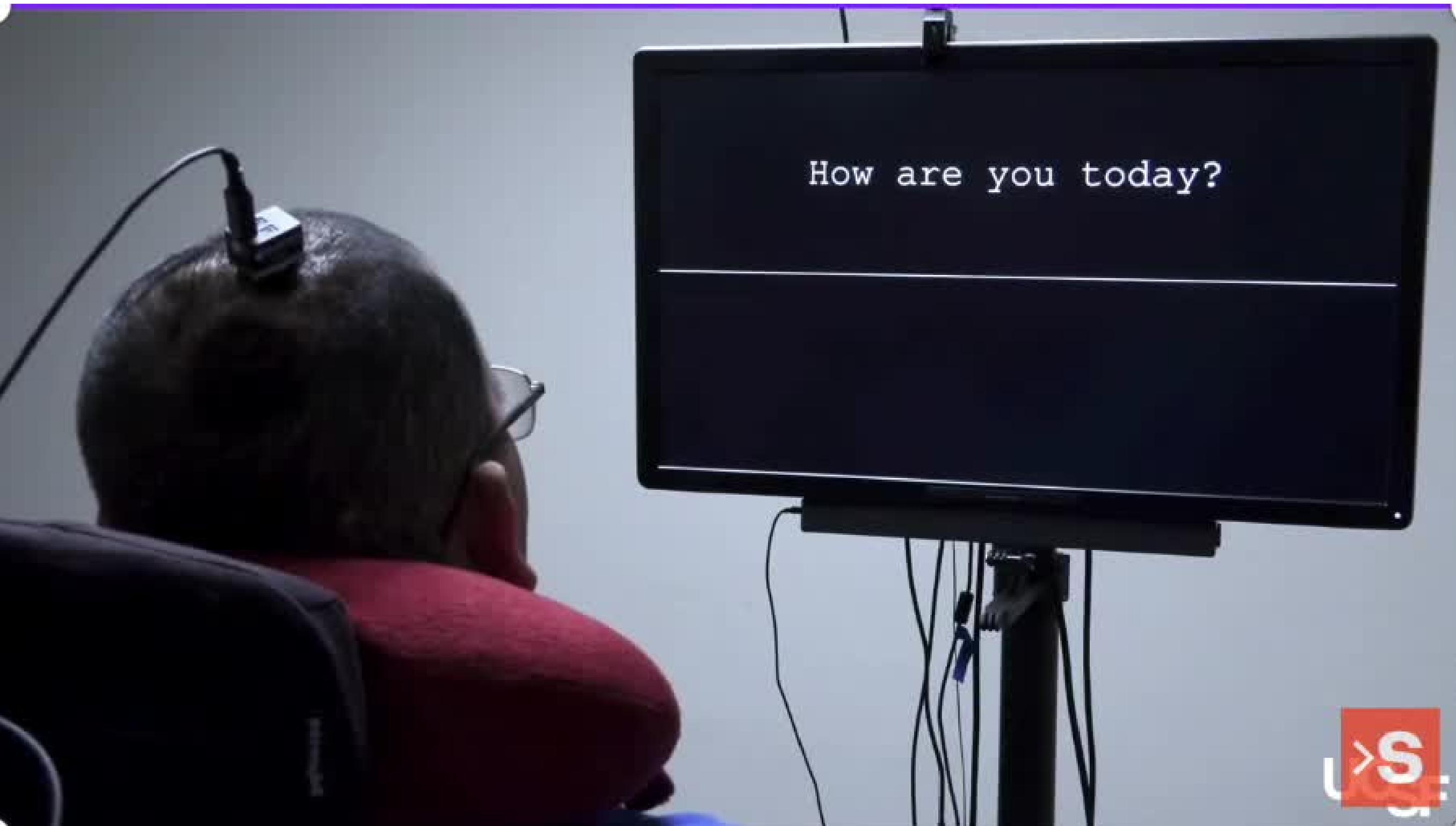




# Result



# Application

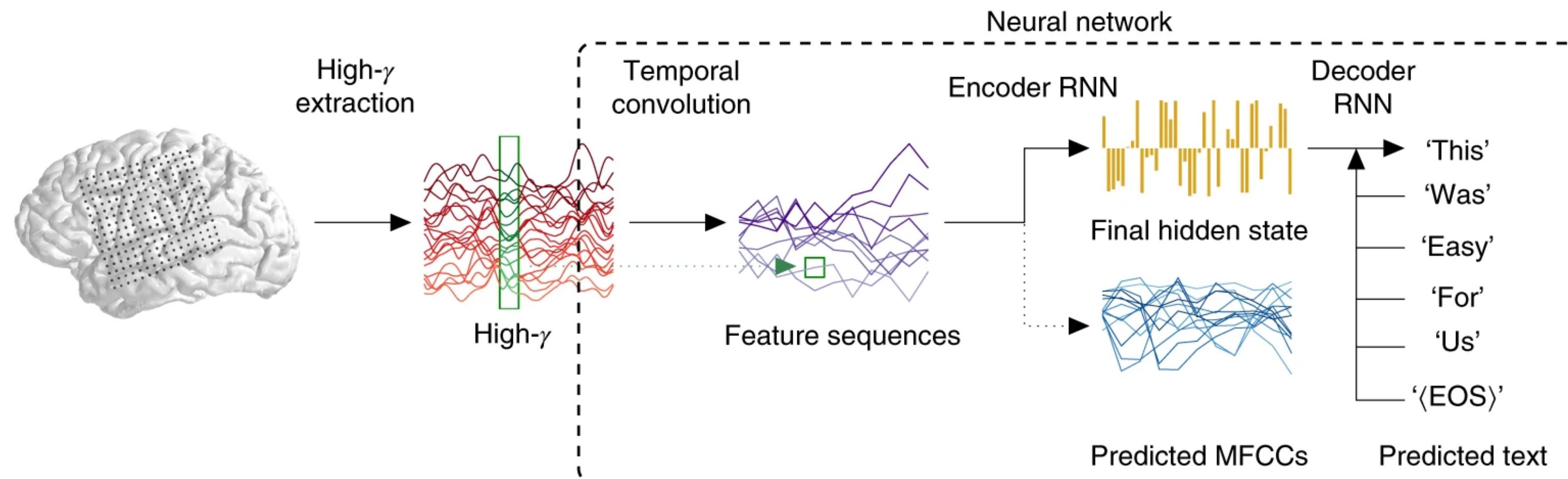


# Application

## Machine translation of cortical activity to text with an encoder–decoder framework

[Joseph G. Makin](#) , [David A. Moses](#) & [Edward F. Chang](#) 

[Nature Neuroscience](#) 23, 575–582 (2020) | [Cite this article](#)

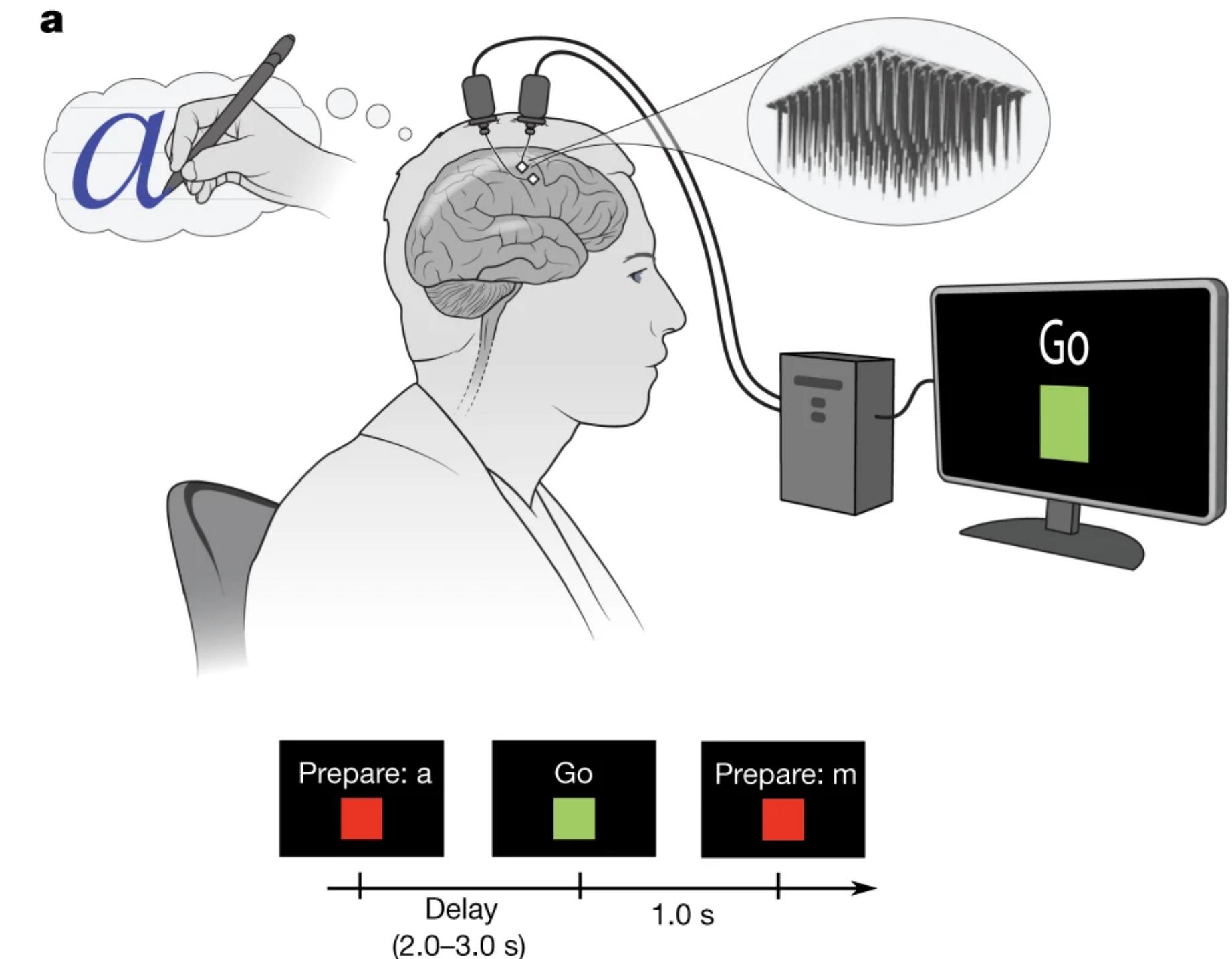


# Application

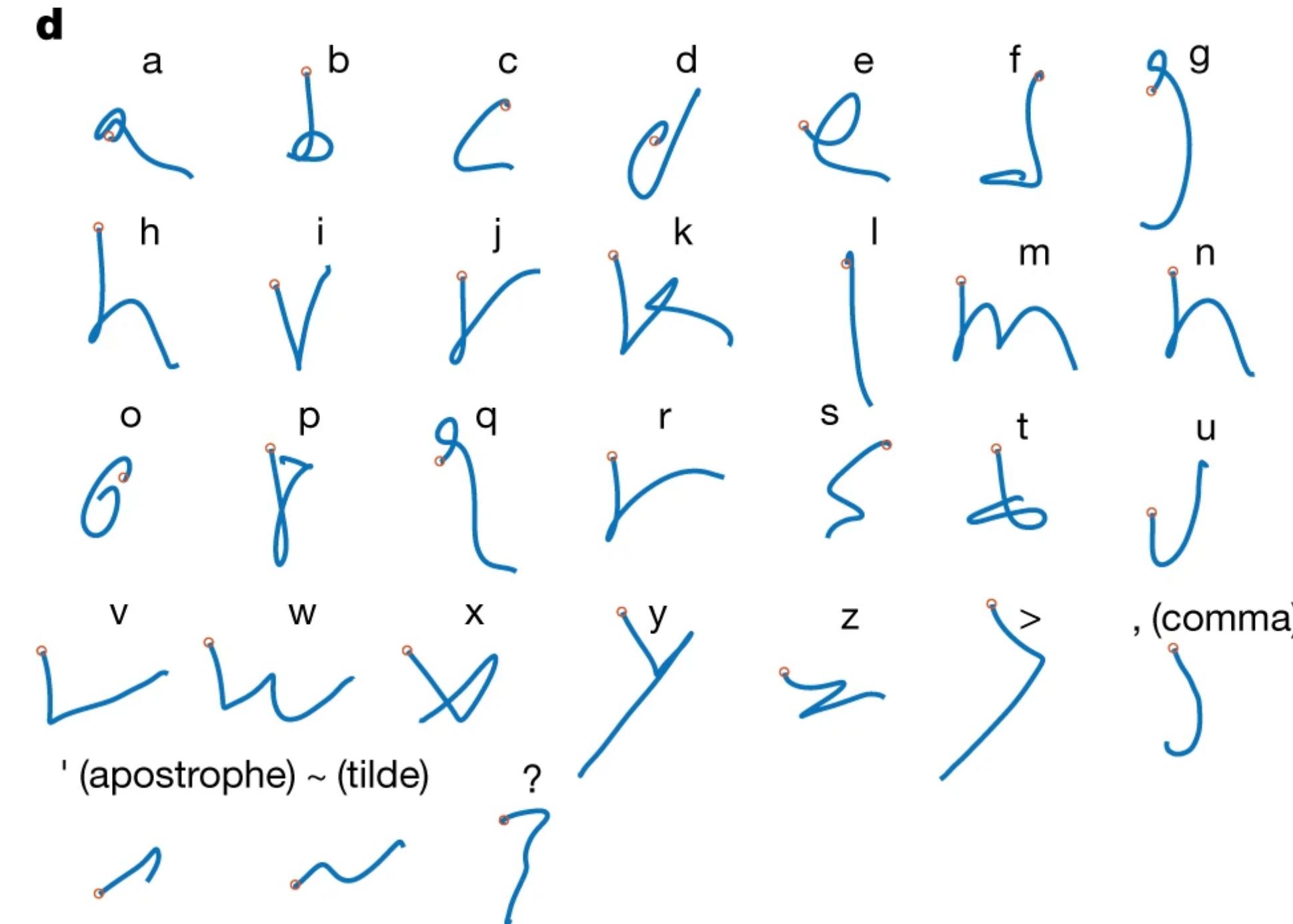
## High-performance brain-to-text communication via handwriting

Francis R. Willett , Donald T. Avansino, Leigh R. Hochberg, Jaimie M. Henderson & Krishna V. Shenoy

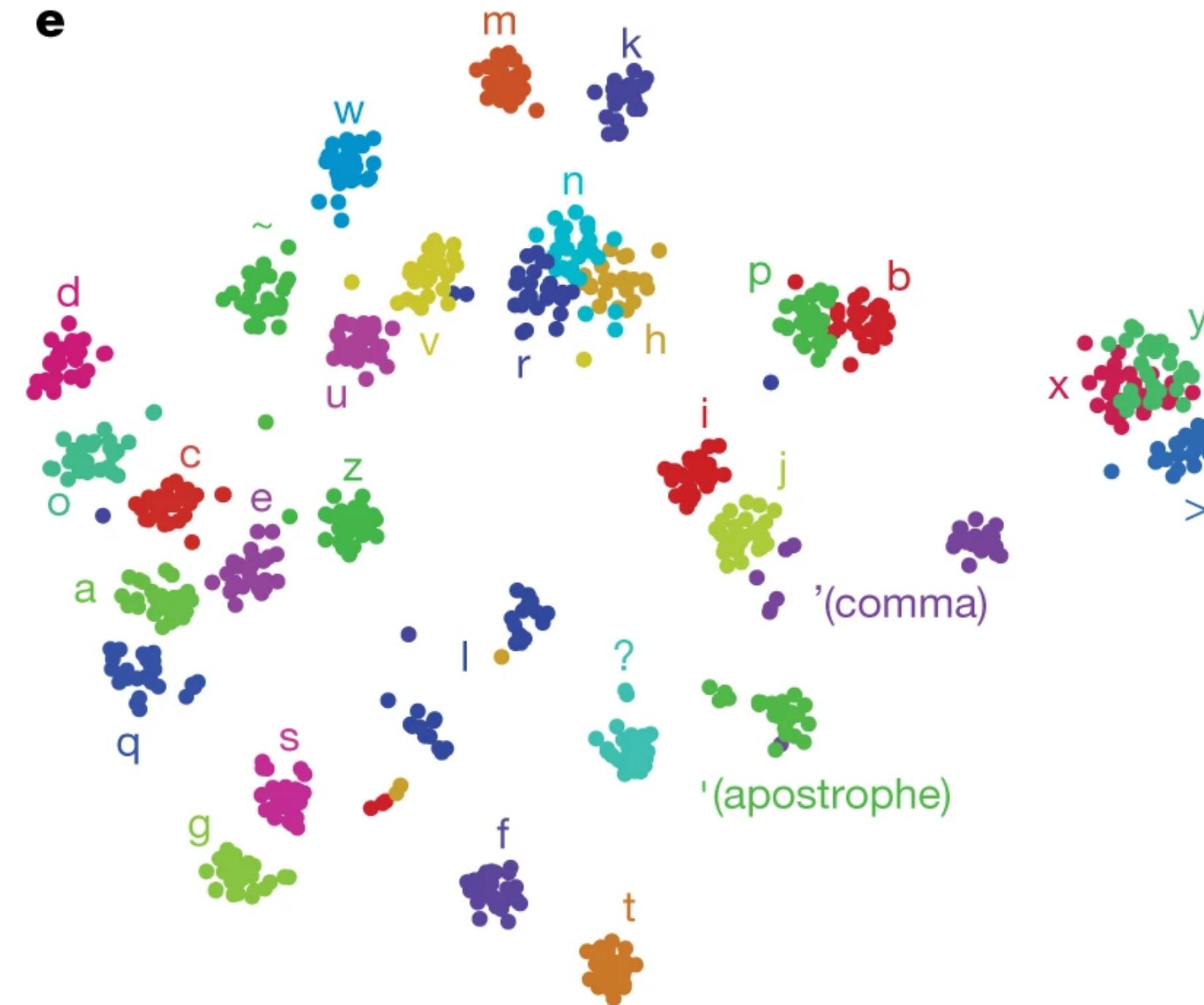
*Nature* 593, 249–254 (2021) | [Cite this article](#)



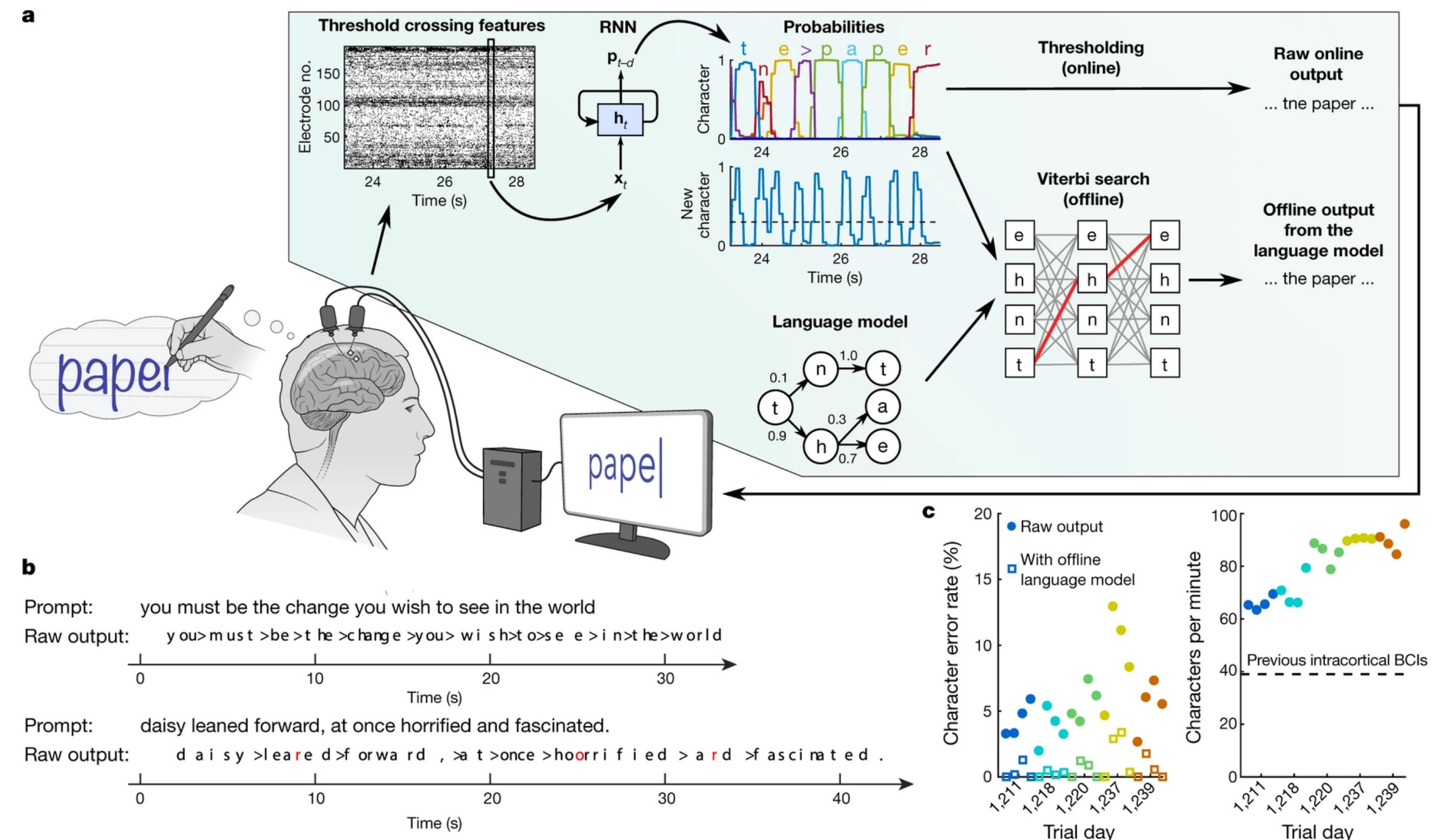
# Application



# Application



# Application



# Application



WI

---

**Data from: High-performance brain-to-text communication via handwriting**

**Willett, Francis**, Stanford University,  <https://orcid.org/0000-0002-2652-8511>

**Avansino, Donald**, Stanford University

**Hochberg, Leigh**, Providence VA Medical Center

**Henderson, Jaimie**, Stanford University,  <https://orcid.org/0000-0002-3276-2267>

**Shenoy, Krishna**, Stanford University,  <https://orcid.org/0000-0003-1534-9240>

**willett2@gmail.com, davansin@stanford.edu, LHOCHBERG@mgh.harvard.edu,**  
**henderj@stanford.edu, shenoy@stanford.edu**

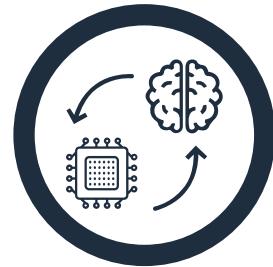
Publication date: October 15, 2021

Publisher: Dryad

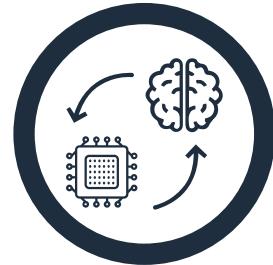
<https://doi.org/10.5061/dryad.wh70rxwmv>

<https://datadryad.org/stash/dataset/doi:10.5061/dryad.wh70rxwmv>

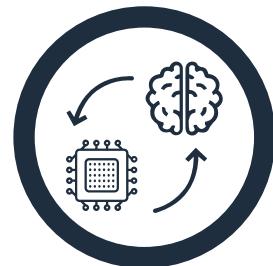
# Summary



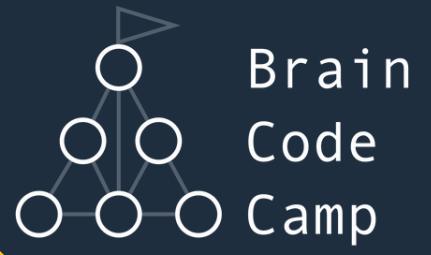
Decoding & Encoding brain signal



Machine learning: Classification  
algorithm



Application of decoding the brain



# Thank You