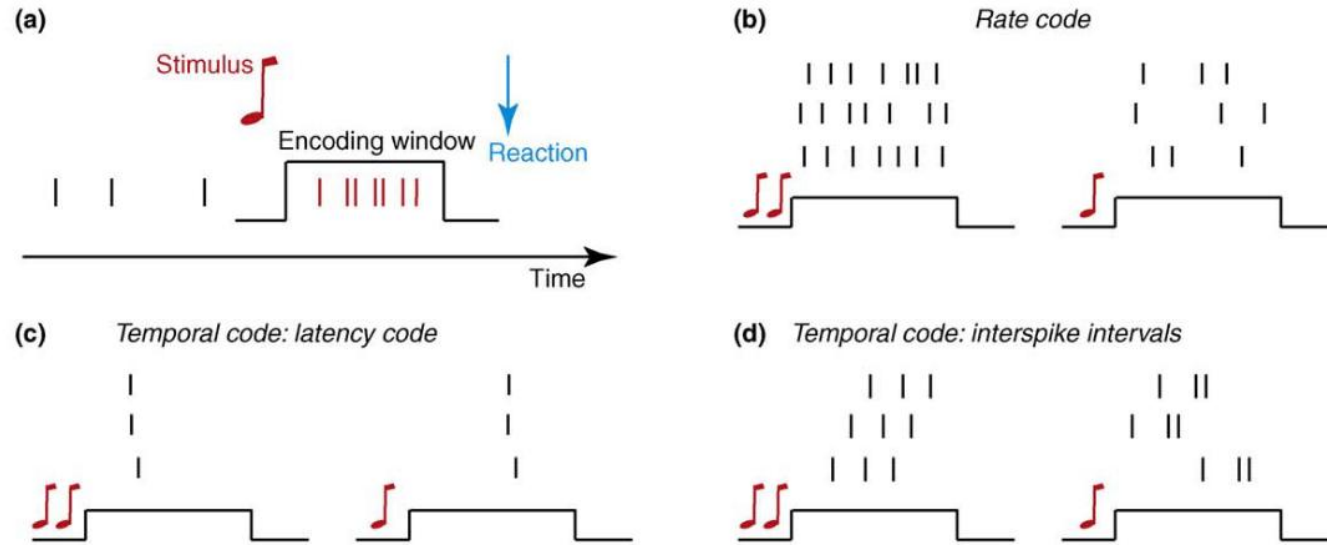


Representation of natural visual features in the primary visual cortex of the marmoset

Representation of **natural visual features** in the **primary** **visual cortex** of the marmoset

Representation of natural visual features in the primary visual cortex of the marmoset

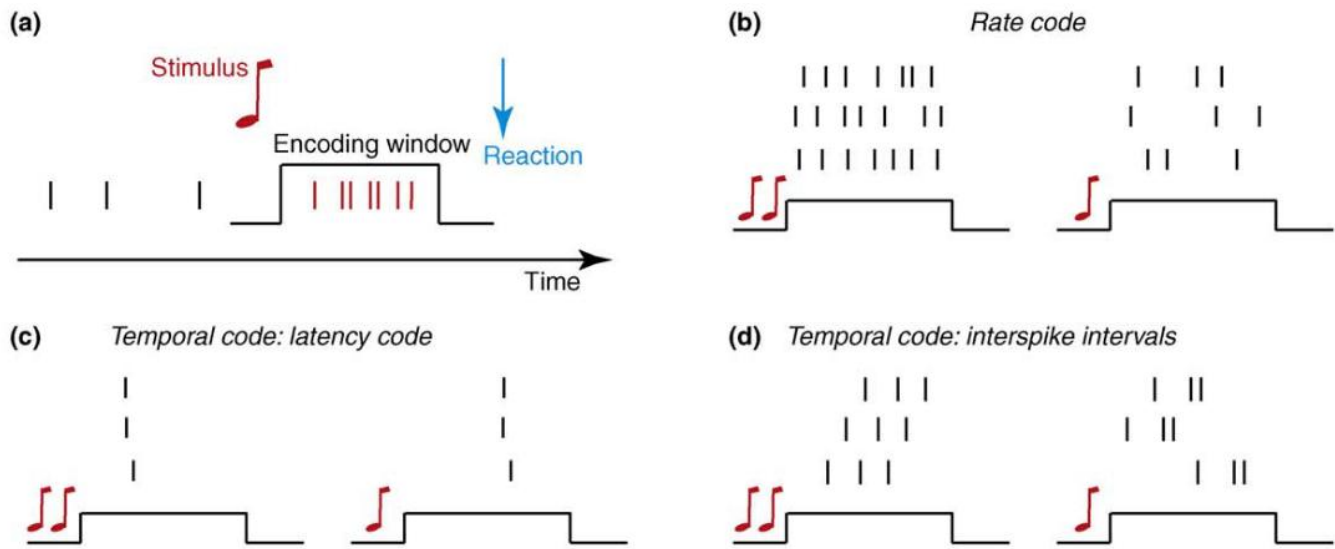
How is information 'encoded' by neuronal activity ?



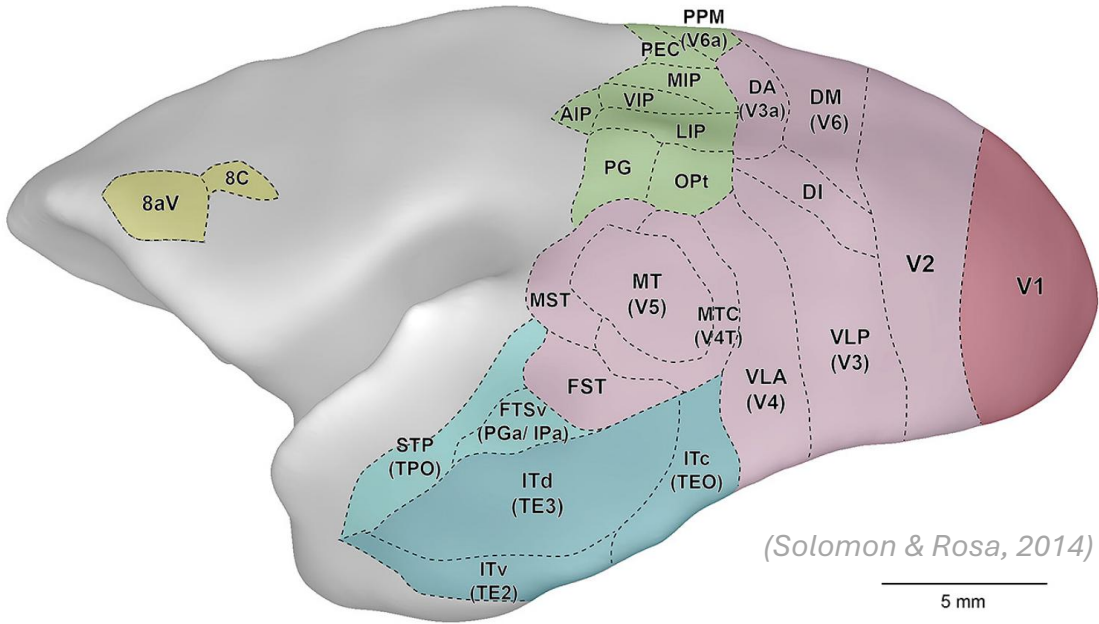
(Panzeri et al., 2010)

Representation of natural visual features in the primary visual cortex of the marmoset

How is information ‘encoded’ by neuronal activity ?

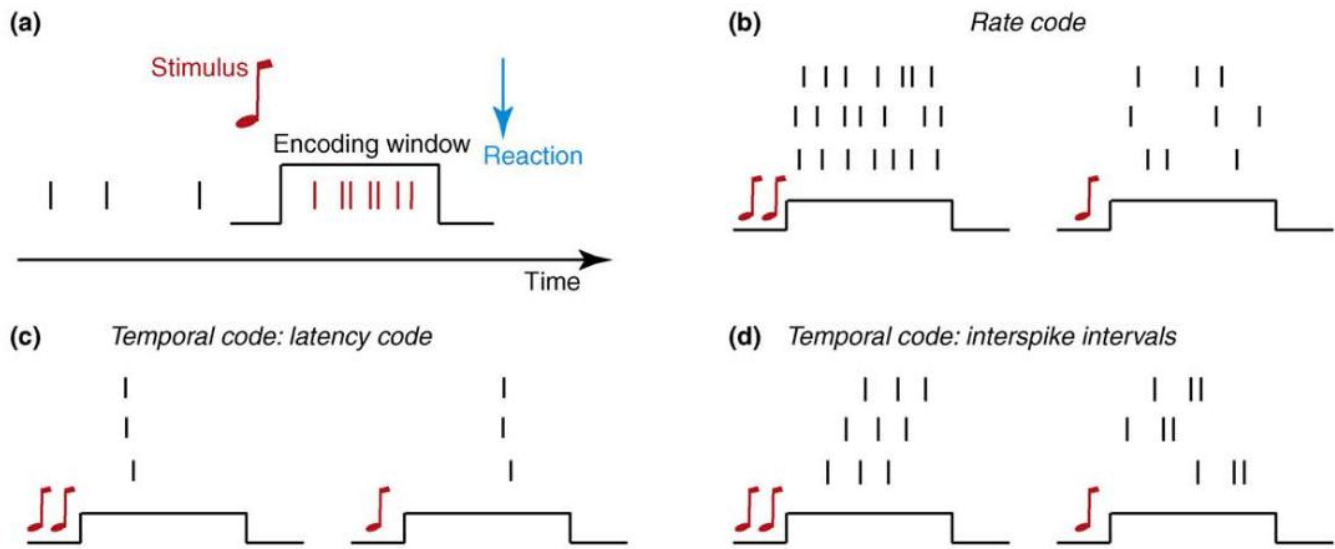


(Panzeri et al., 2010)

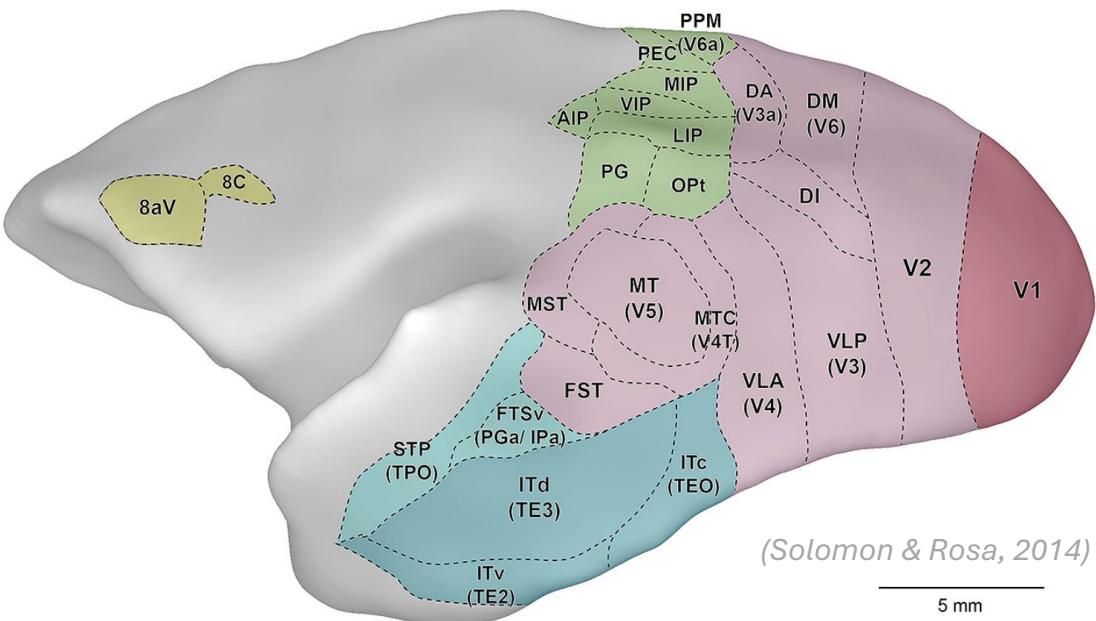


Representation of natural visual features in the primary visual cortex of the marmoset

How is information 'encoded' by neuronal activity ?



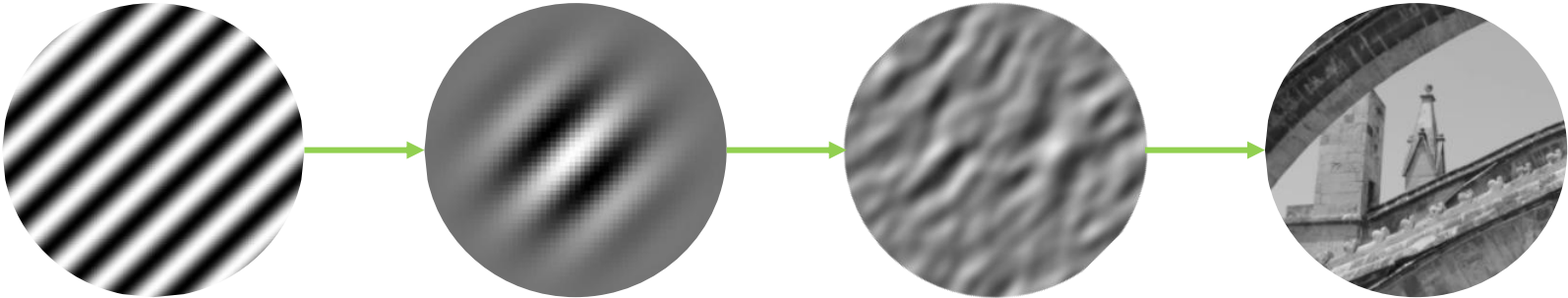
(Panzeri et al., 2010)



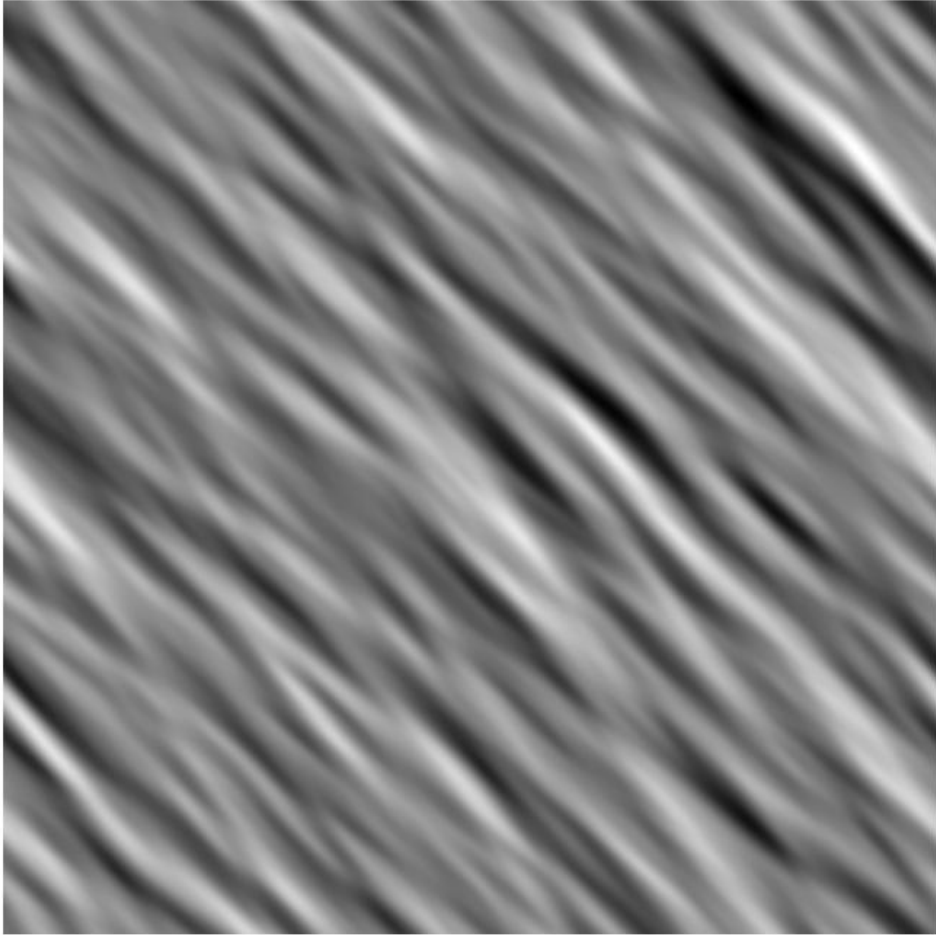
(Solomon & Rosa, 2014)

How is information processed along the visual pathway ?

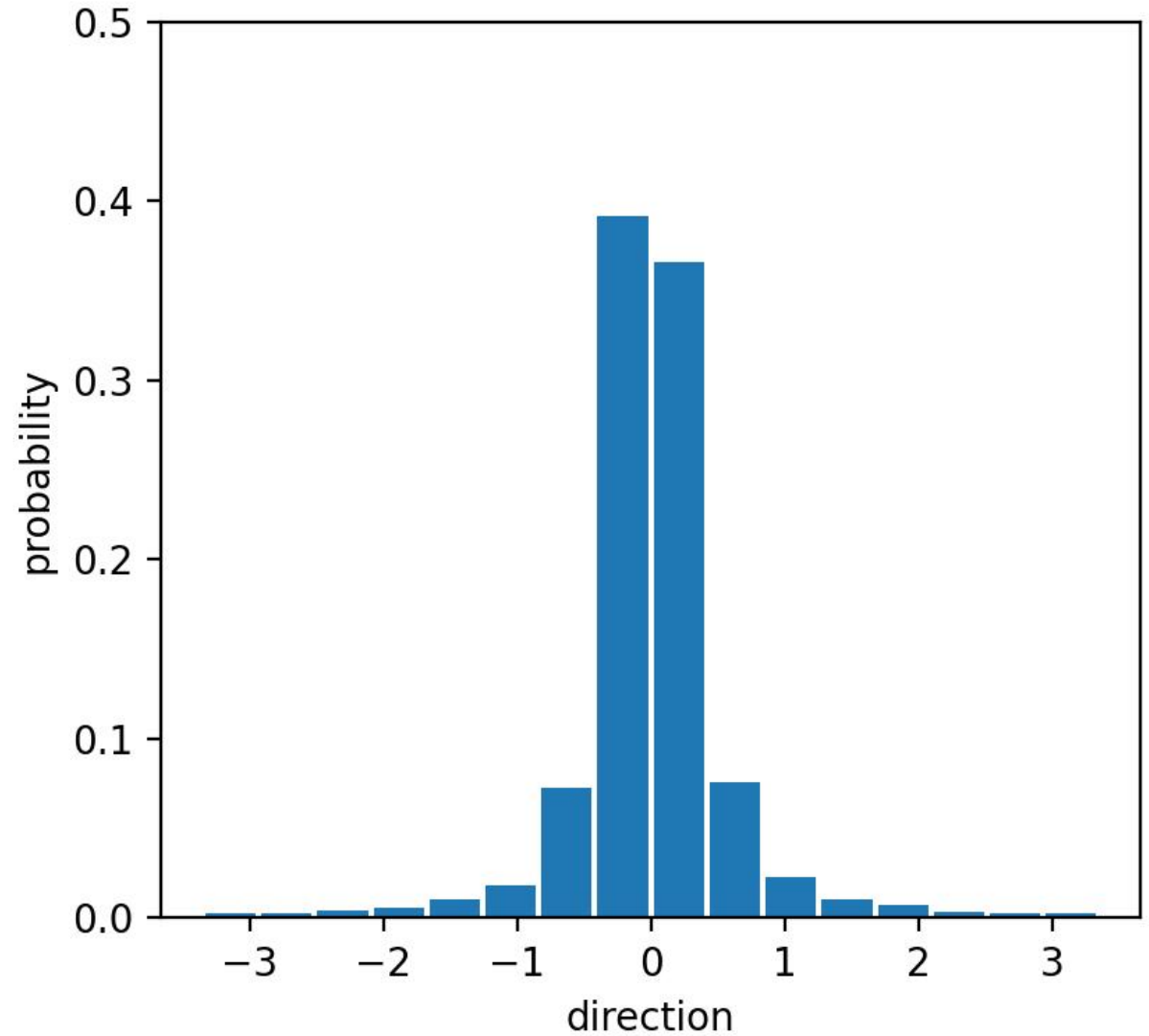
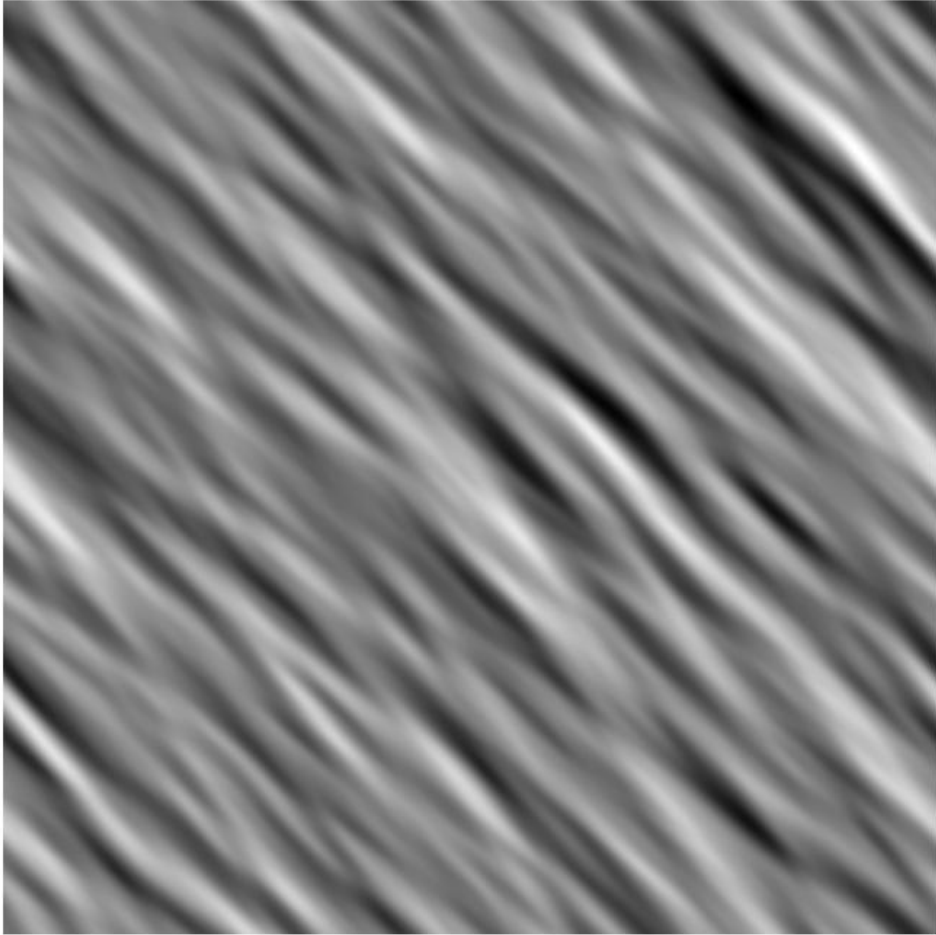
What defines a natural stimulus ? Variability ?



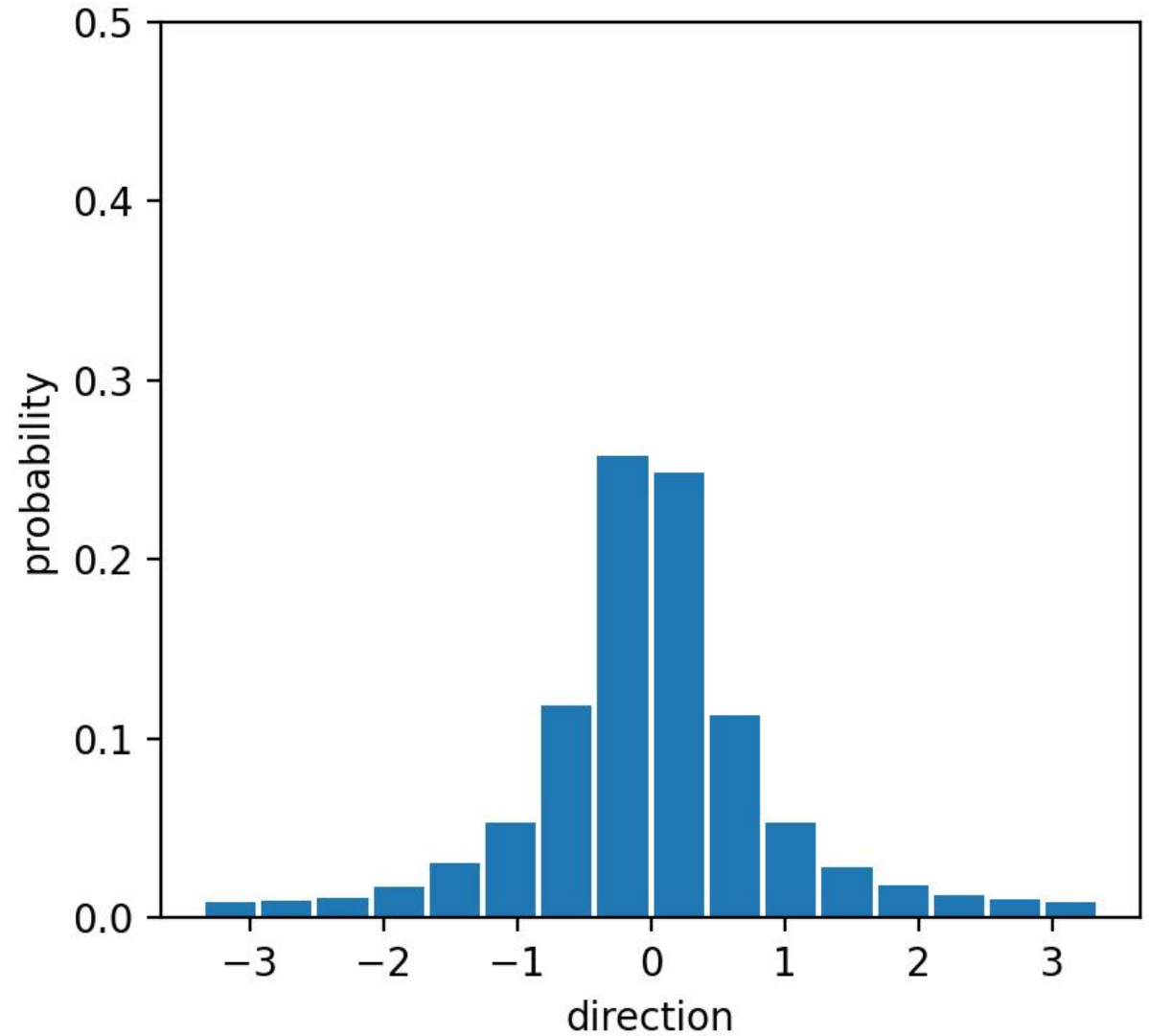
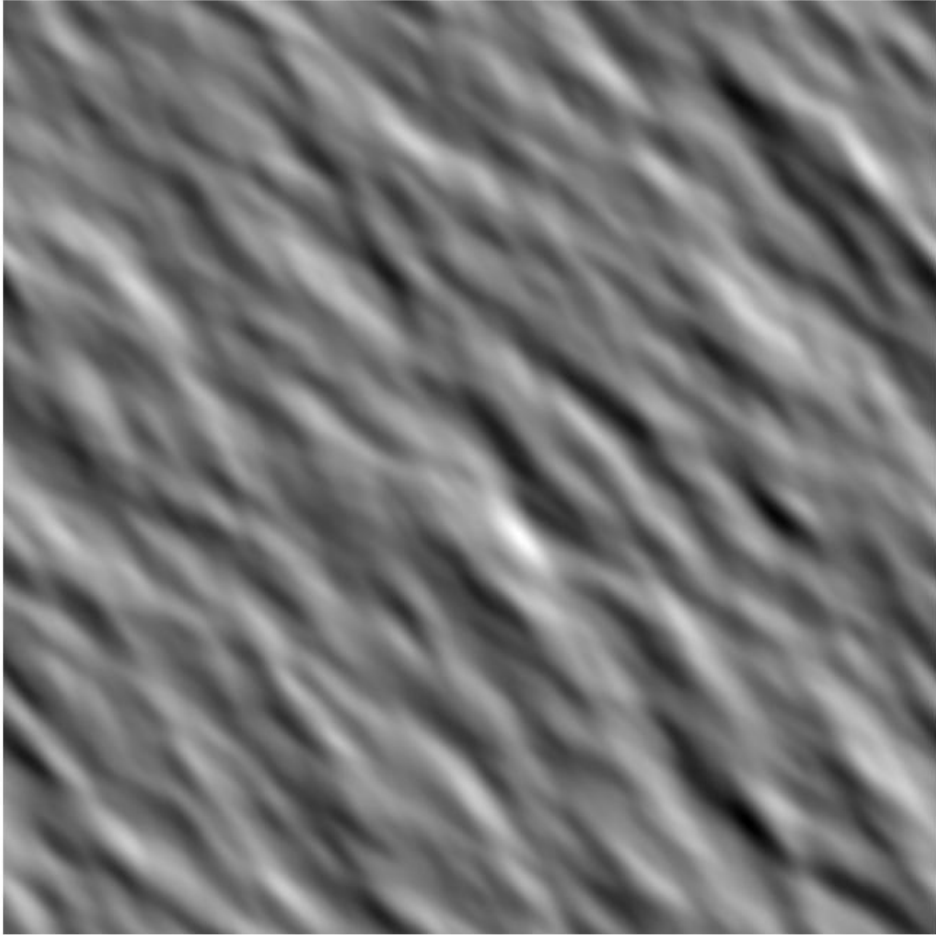
Representation of natural visual features in the primary visual cortex of the marmoset



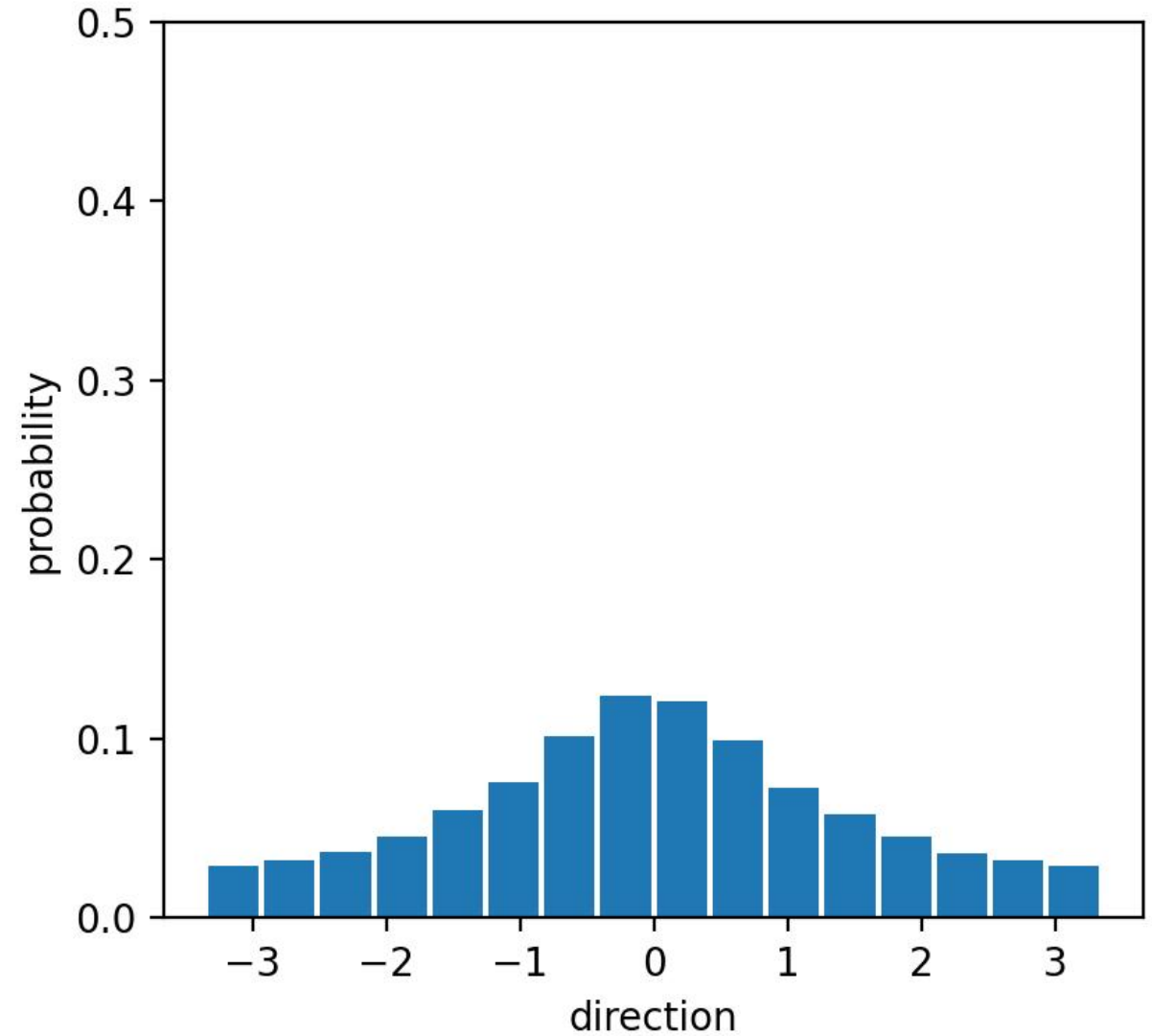
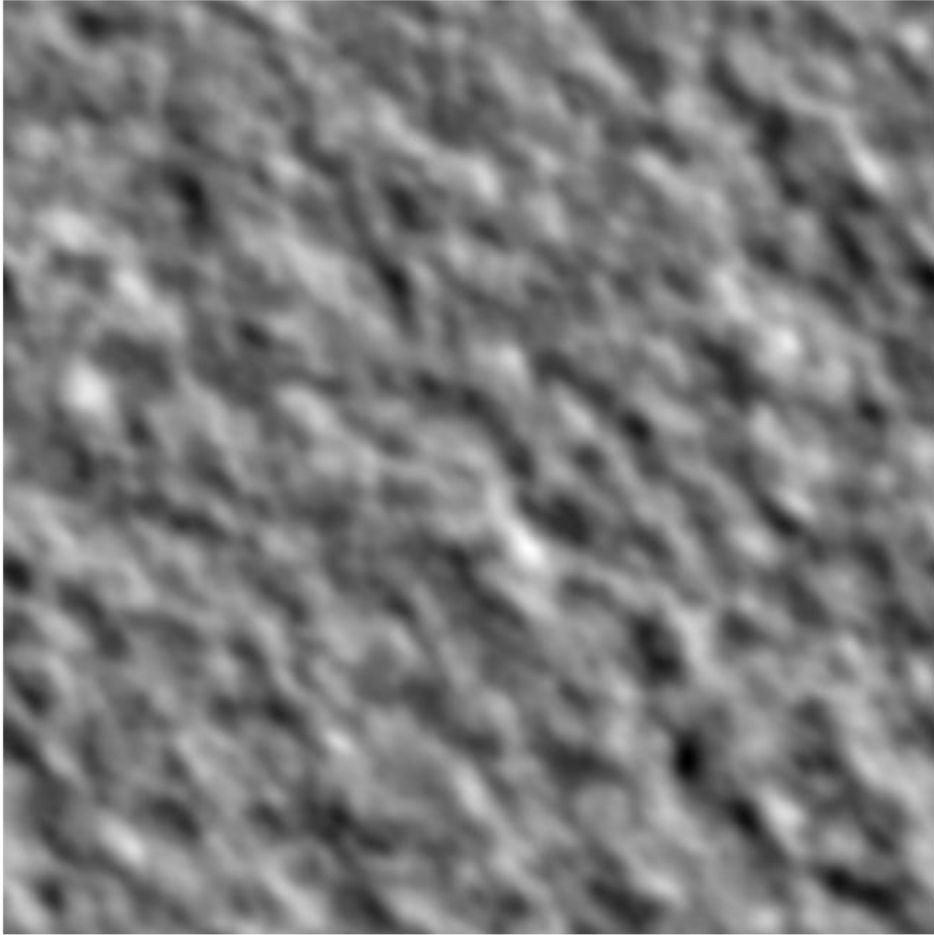
Representation of natural visual features in the primary visual cortex of the marmoset



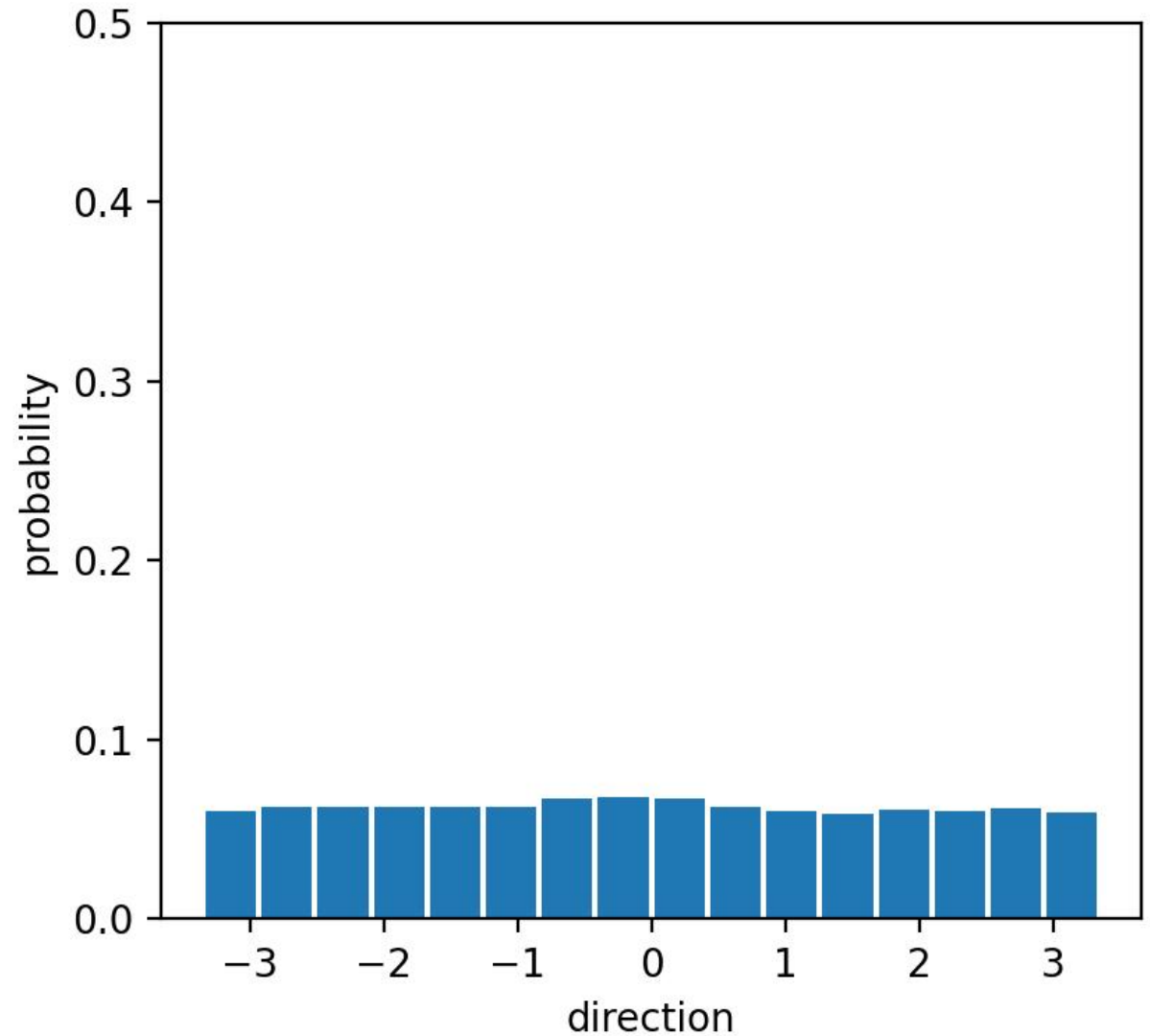
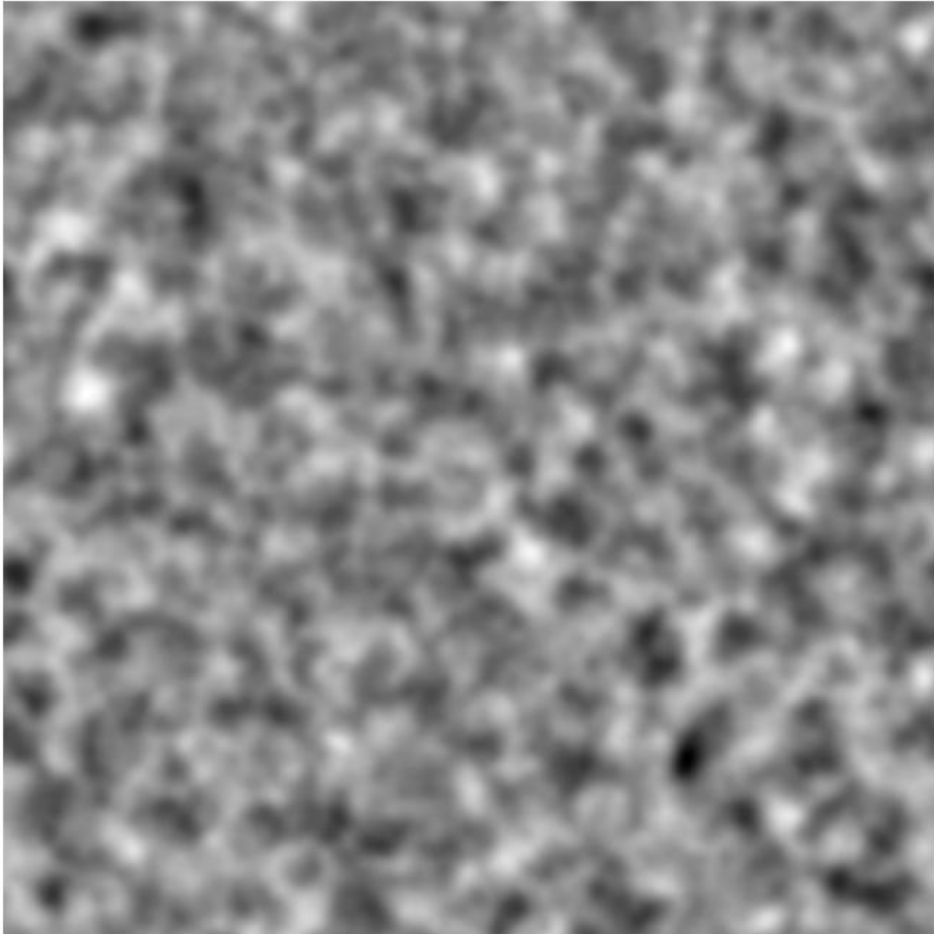
Representation of natural visual features in the primary visual cortex of the marmoset



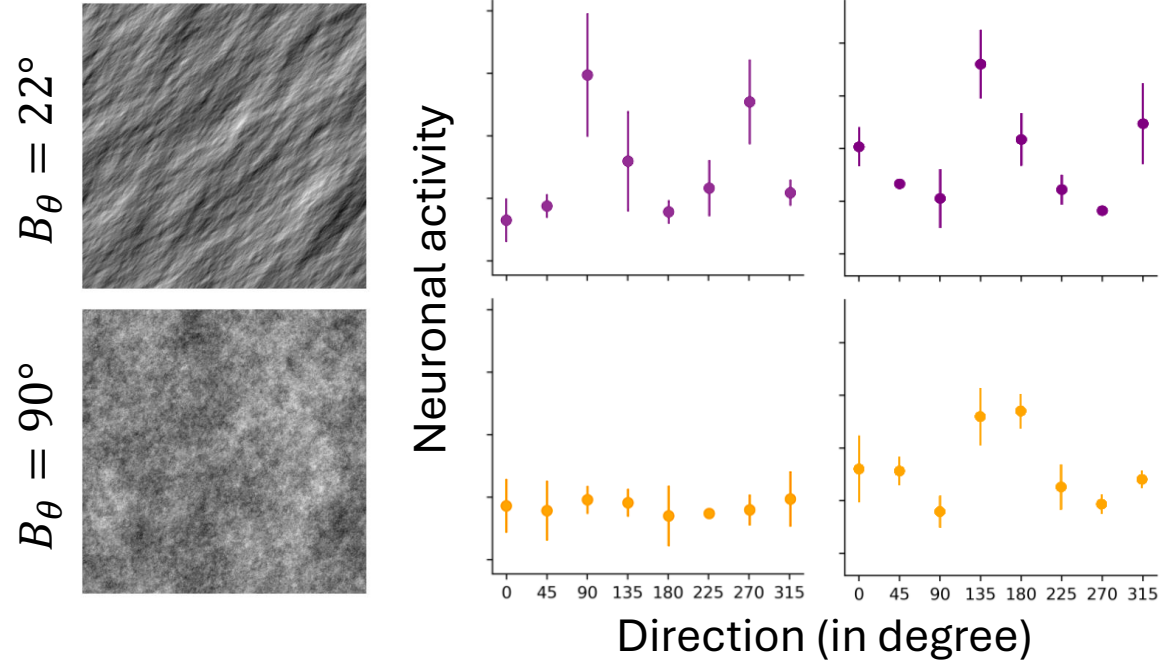
Representation of natural visual features in the primary visual cortex of the marmoset



Representation of natural visual features in the primary visual cortex of the marmoset



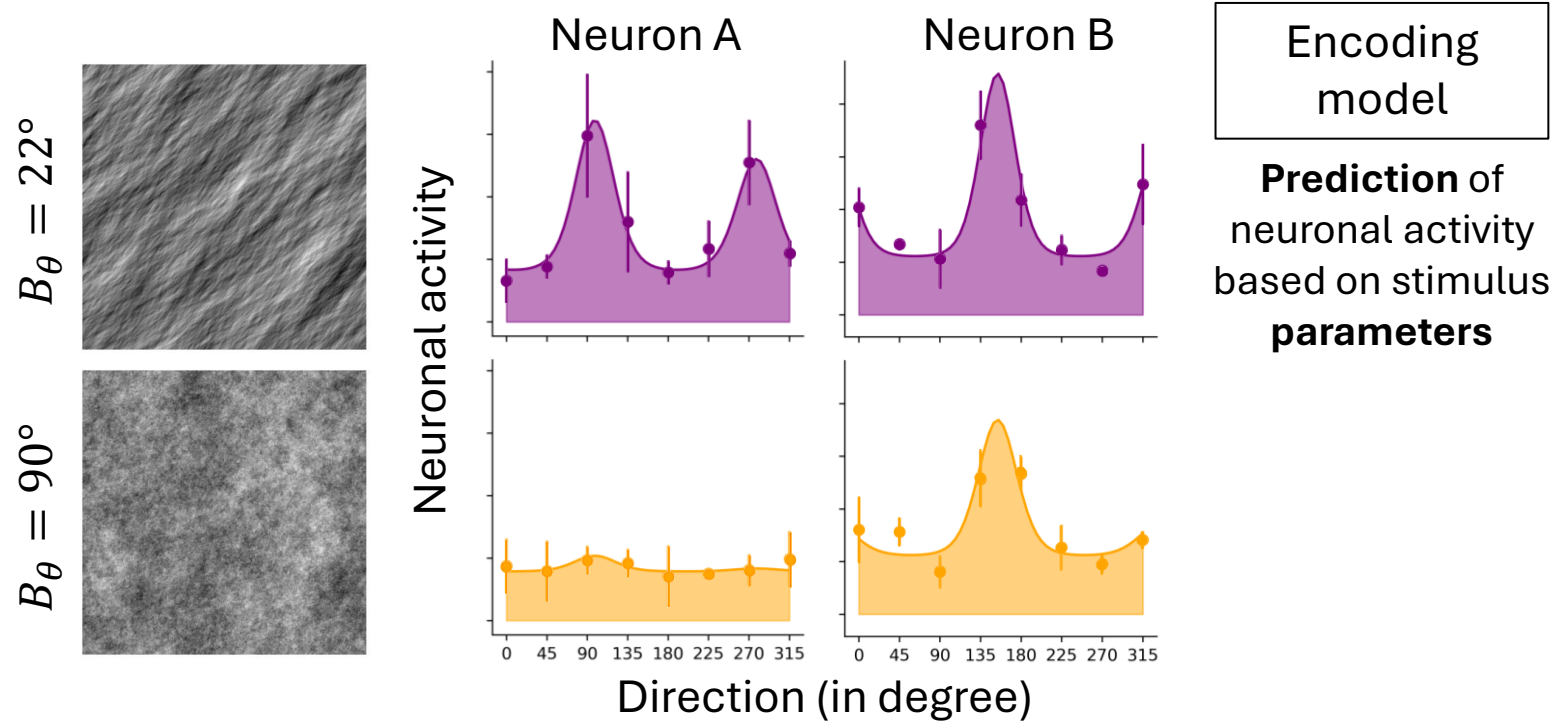
Representation of natural visual features in the primary visual cortex of the marmoset



Encoding
model

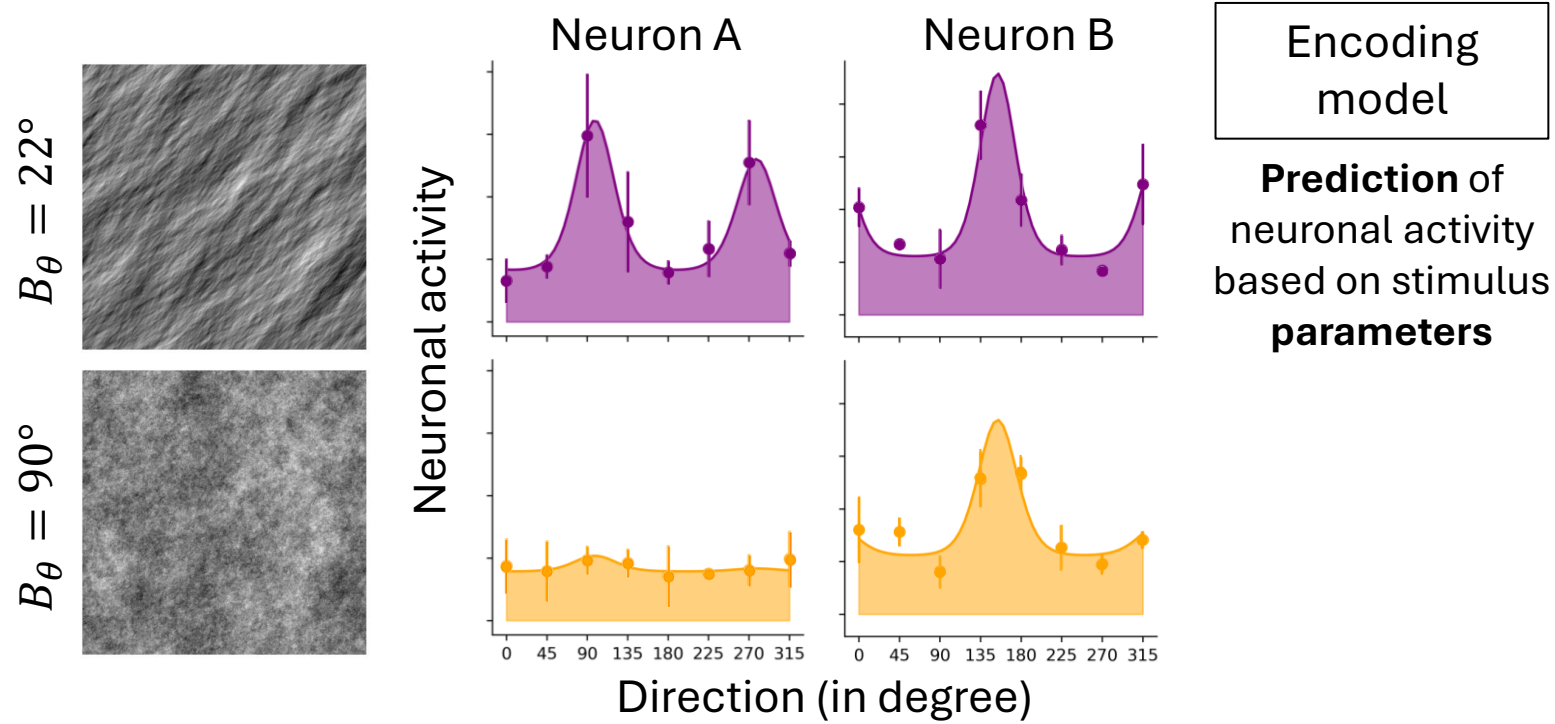
**Prediction of
neuronal activity
based on stimulus
parameters**

Representation of natural visual features in the primary visual cortex of the marmoset

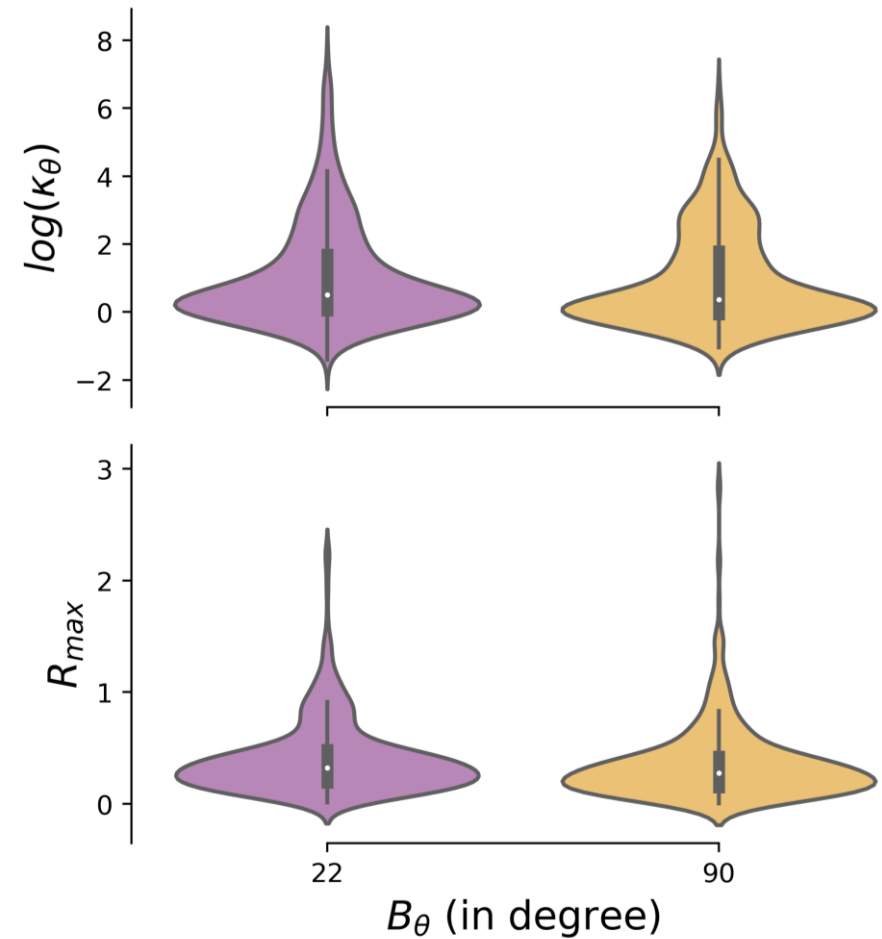


$$\underbrace{R_0 + (R_{\max} - R_0)}_{\text{level activity}} \times \underbrace{\exp\left(\kappa_\theta (\cos(2 \times (\theta - \theta_0)) - 1) + \kappa_\phi (\cos(\theta - \theta_0) - 1)\right)}_{\text{orientation/direction selectivity}}$$

Representation of natural visual features in the primary visual cortex of the marmoset



$$\underbrace{R_0 + (R_{\max} - R_0)}_{\text{level activity}} \times \underbrace{\exp\left(\kappa_\theta (\cos(2 \times (\theta - \theta_0)) - 1) + \kappa_\phi (\cos(\theta - \theta_0) - 1)\right)}_{\text{orientation/direction selectivity}}$$



Representation of natural visual features in the primary visual cortex of the marmoset

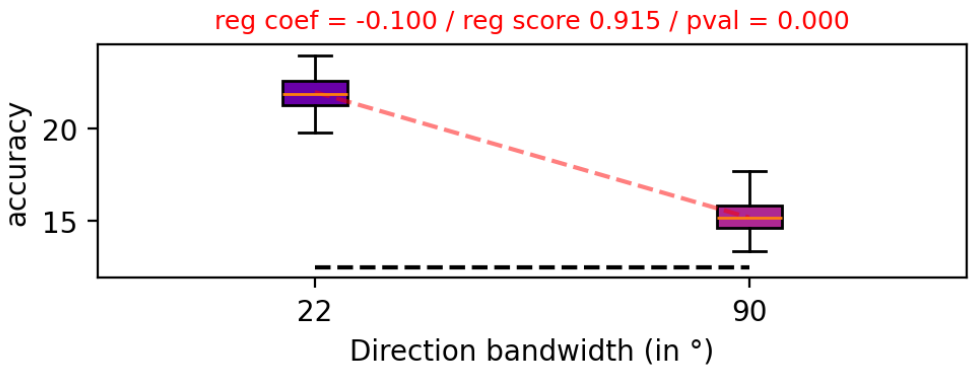
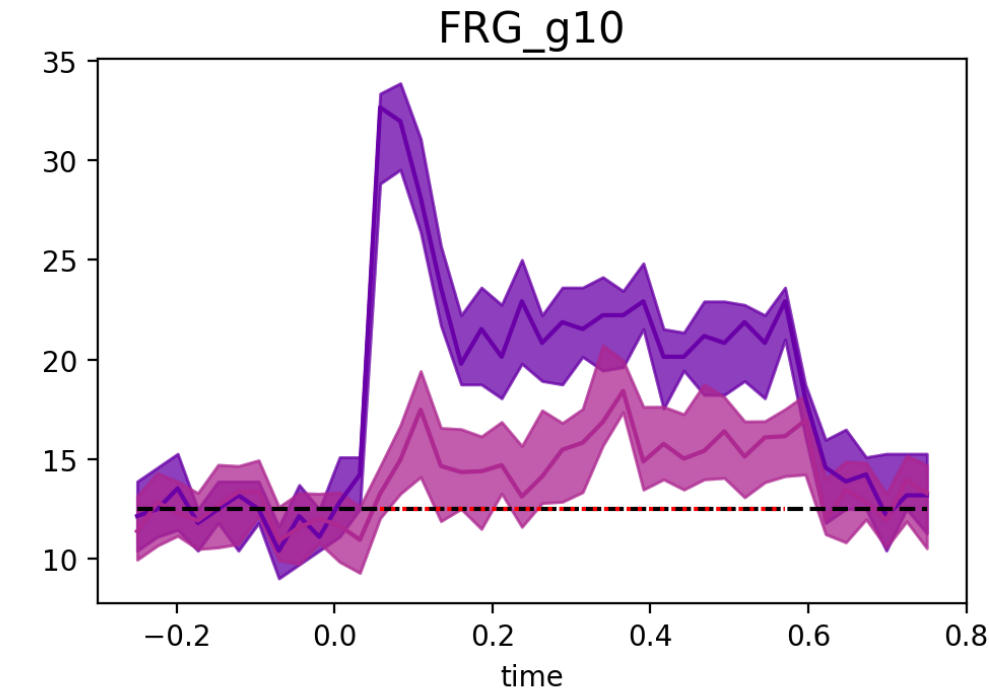
Decoding
model

Prediction of
stimulus
parameters based
on neuronal
activity.

Representation of natural visual features in the primary visual cortex of the marmoset

Decoding model

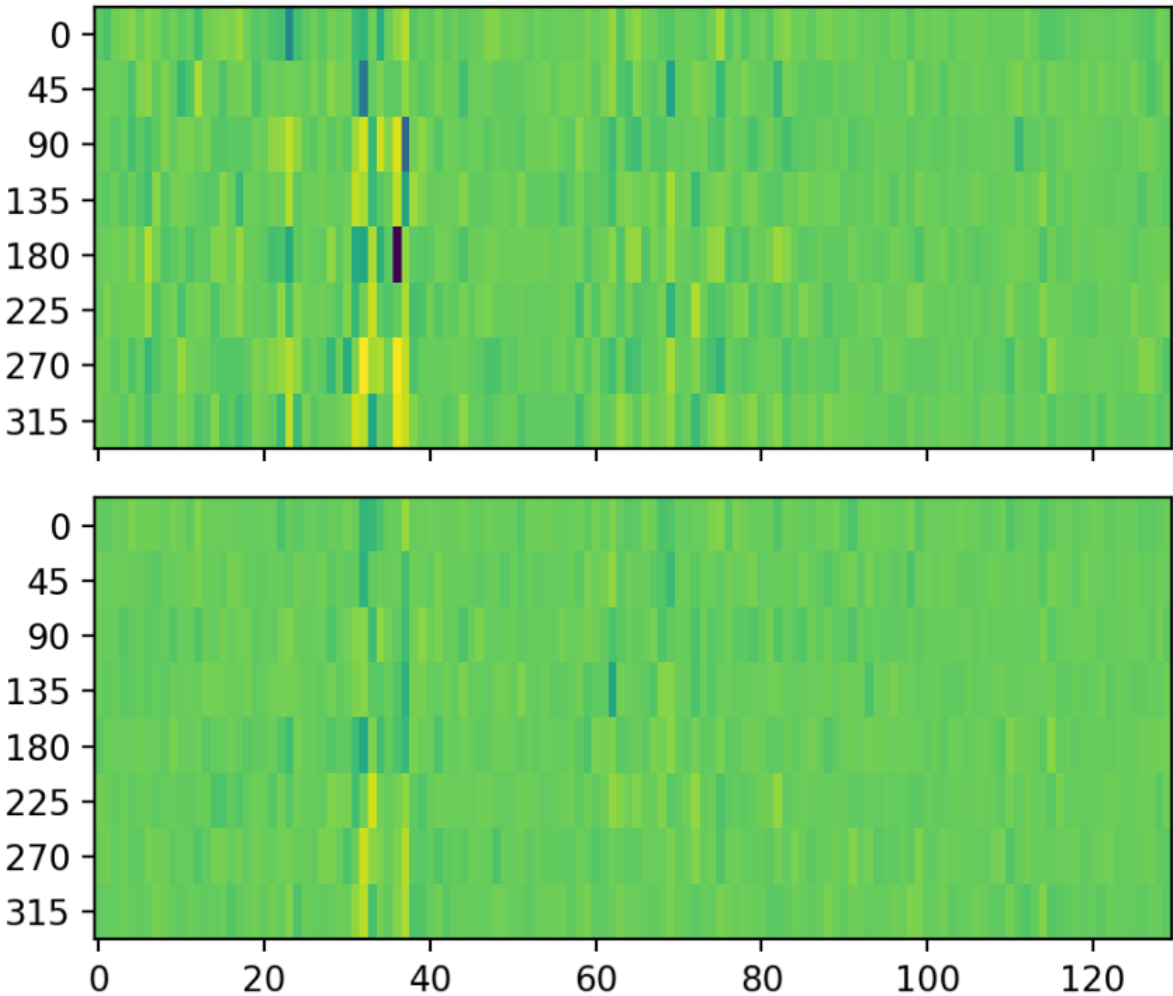
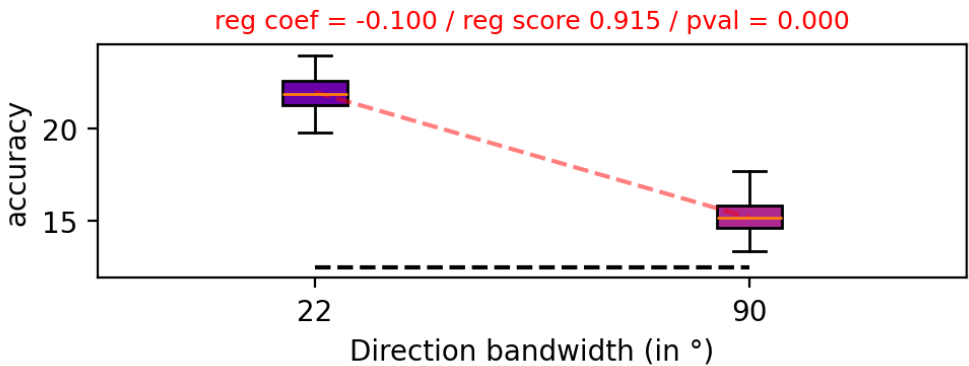
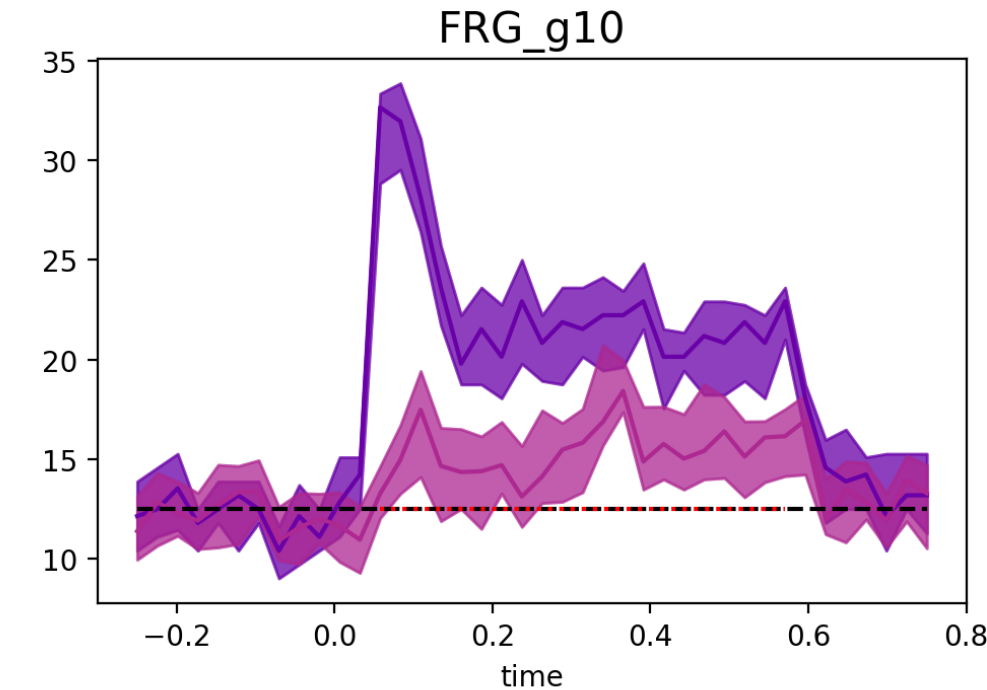
Prediction of stimulus parameters based on neuronal activity.



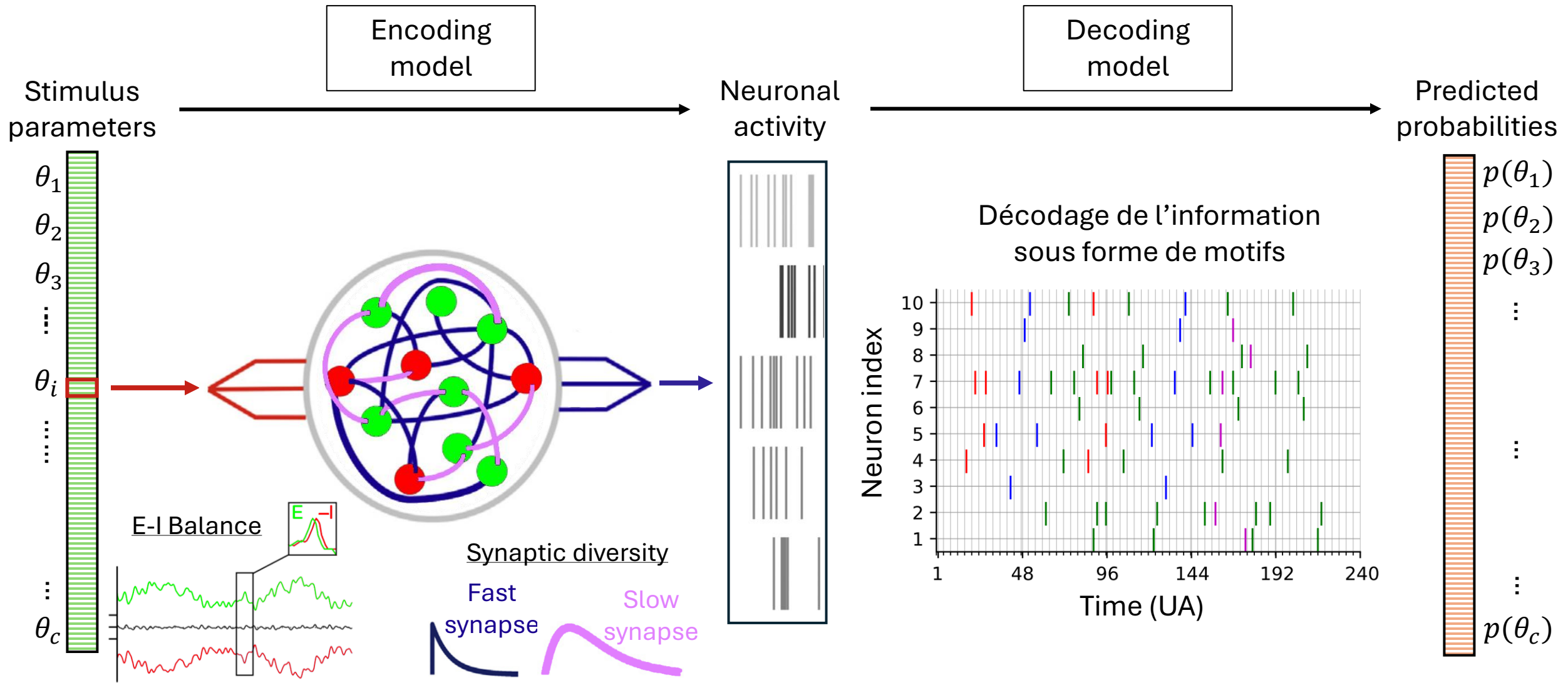
Representation of natural visual features in the primary visual cortex of the marmoset

Decoding model

Prediction of stimulus parameters based on neuronal activity.



Thesis project



(Denève et al., 2017; Denève & Machens, 2016)

(Grimaldi, Perrinet et al., 2022)