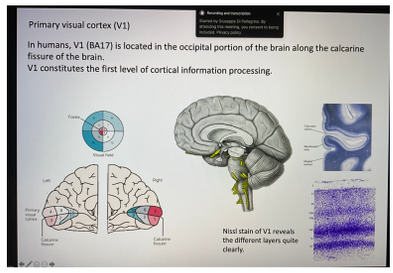
Exercise (solutions in class)

Q1) The left lateral geniculate nucleus (LGN) hosts a representation:
1. Of the entire left visual hemifield
2. Of the entire right visual hemifield
3. Only the binocular region of the right visual hemifield
4. Only the monocular region of the left visual hemifield
5. Of the entire visual field

left → right

Q2) An ordered representation of the visual field in the brain visual regions is defined:
1. somatotopic map
2. proprioceptive map
3. salience map
4. retinotopic map
5. tonotopic map

sensory homunculus



Q3) The presentation of a visual stimulus activates
1. Simultaneously the ventral and the dorsal visual pathway
2. First the dorsal visual pathway and then the ventral visual pathway
3. First the ventral visual pathway and then the dorsal visual pathway
4. Only the ventrai visual pathway
5. Only the dorsal visual pathway

ms difference

dorsal → location
ventral → what

Q4) According to Hubel and Wiesel, which cells of the visual system selectively respond to stimulus orientation:
1. Retinal ganglion cells
2. Retinal bipolar cells
3. Parvocellular cells of the LGN
4. Magnocellular cells of the LGN
5. Simple cells of V1

↓
first coded in V1

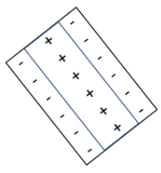
Q5) Which information is processed by neurons of the blob regions of V1?
1. Orientation of outlines
2. Color contrast
3. Disparity
4. Direction of movement
5. Spatial frequency

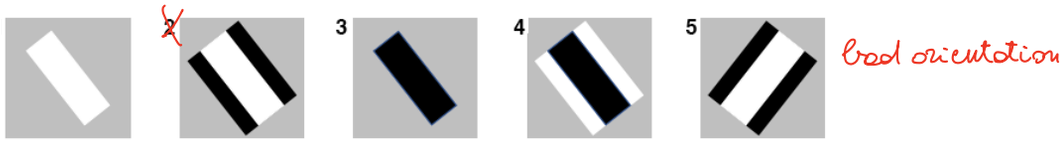
↓
code colours of the stimulus

Q6) Which is the main computational problem that the ventral visual pathway has to solve:
1. Sensory-motor integration
2. Perception of movement
3. Perceptual invariance
4. Multimodal integration
5. Cognitive conflict

recognize regardless of scale, illumination, occlusions

Q7) Among the 5 illustrated, which is the most effective stimulus for activating the simple cell of V1 whose receptive field is schematized below(+ = activated by light; - = inhibited by light)?





bad orientation

fits perfectly