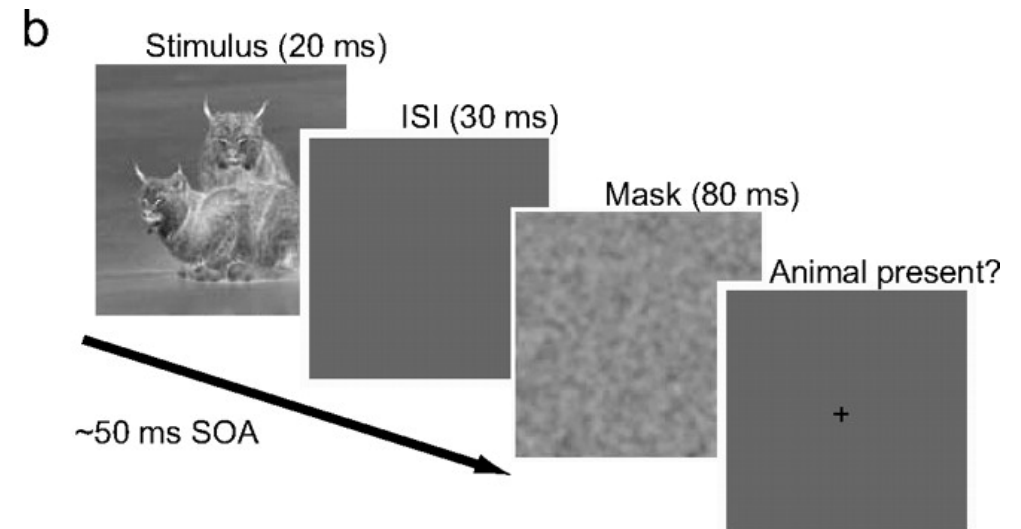
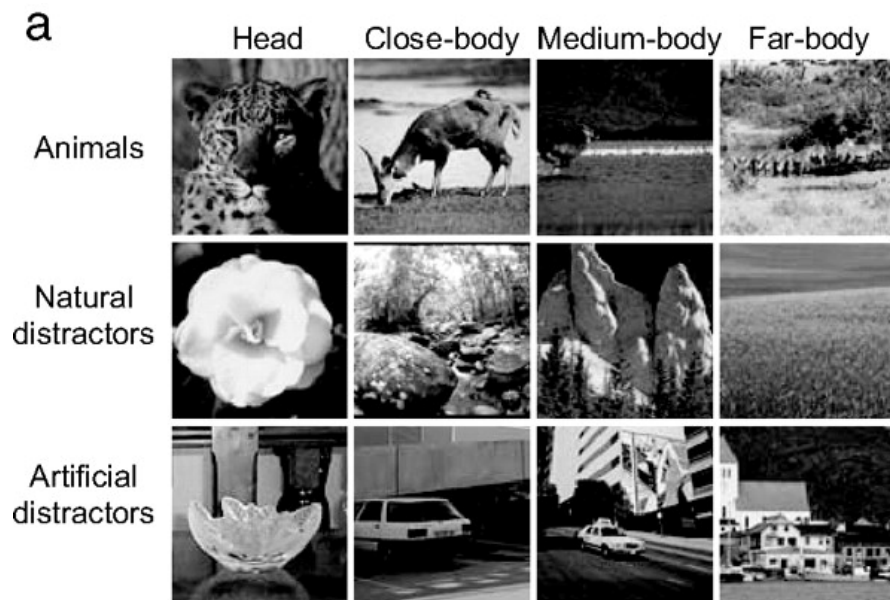


# Object Recognition in Temporal Cortex

## Computational Models of Neural Systems Lecture 8.2

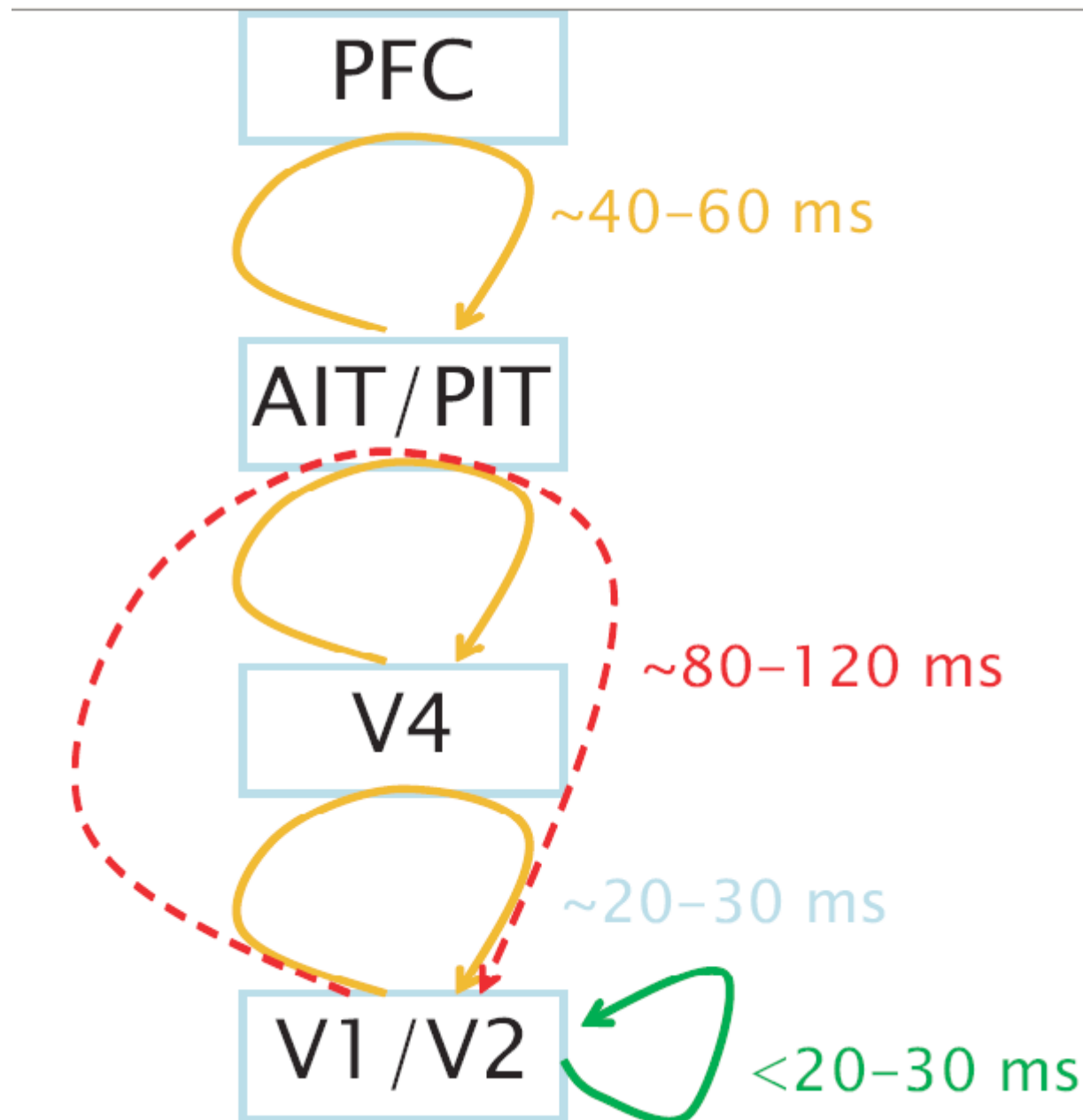
David<sup>1</sup> S. Touretzky  
December, 2025

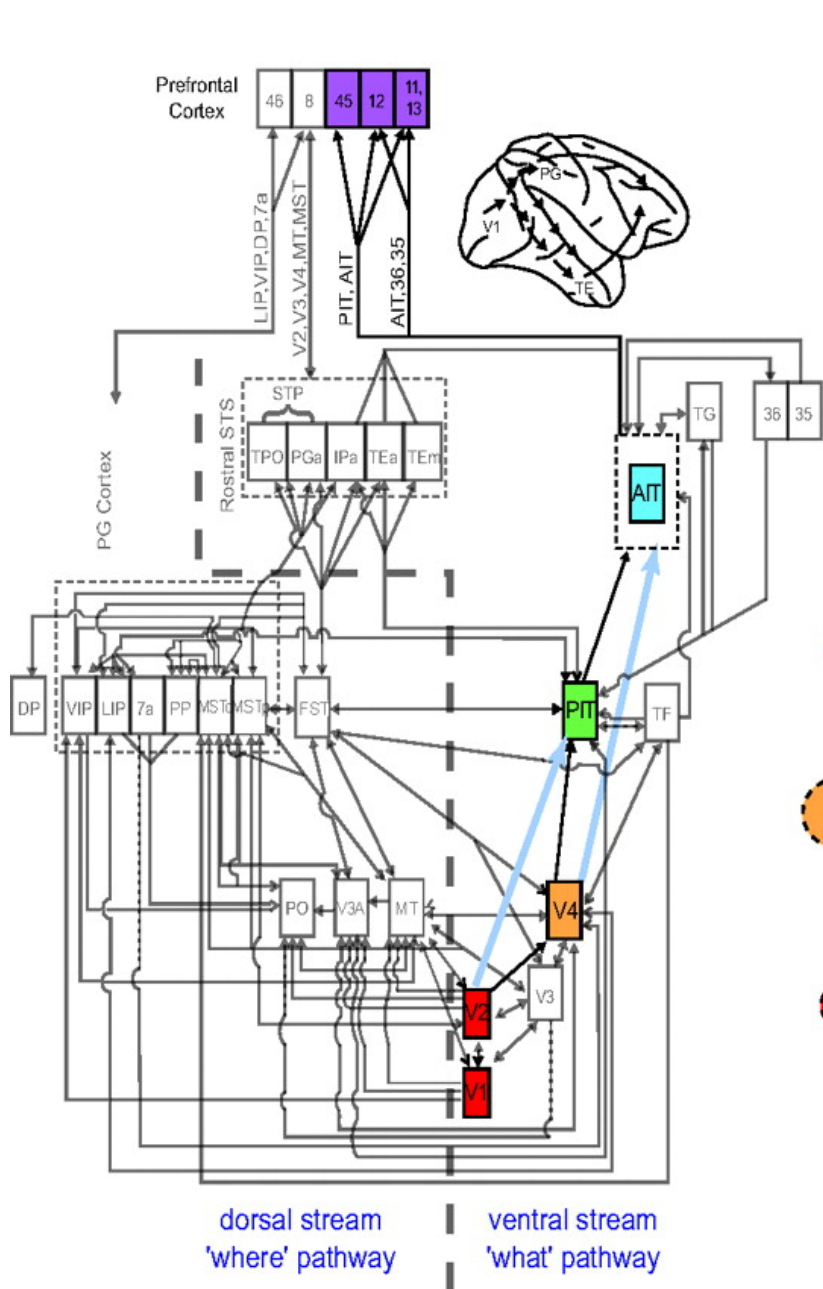
# From Serre, Oliva, & Poggio (2007)



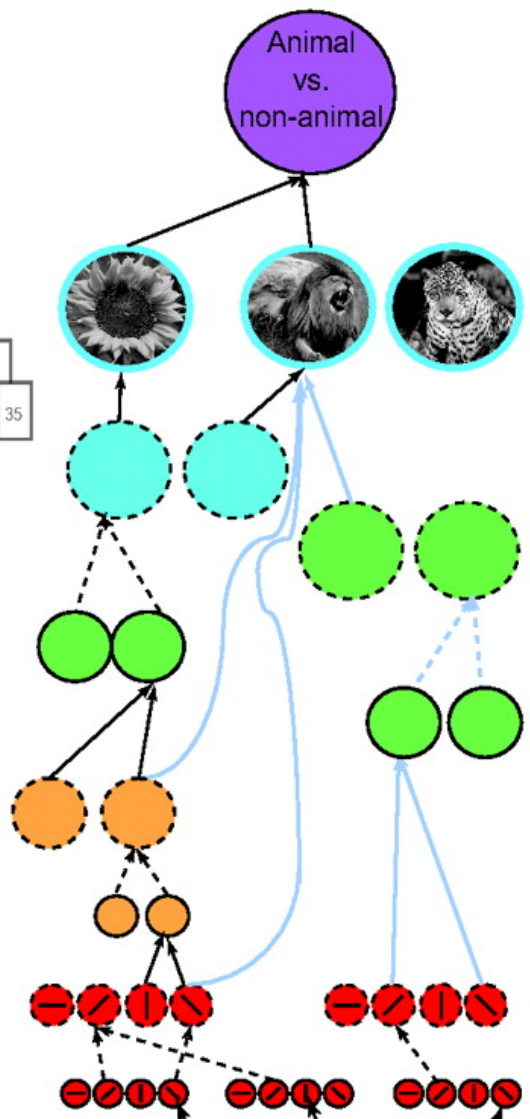
SOA = Stimulus Onset Asynchrony

# Timing of Feedback Loops: Monkeys & Humans

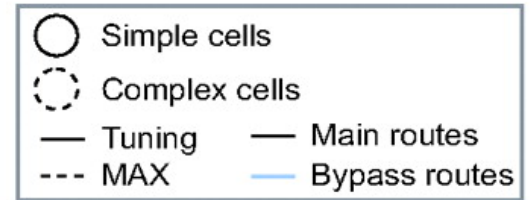
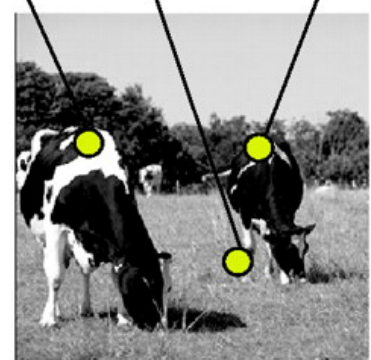




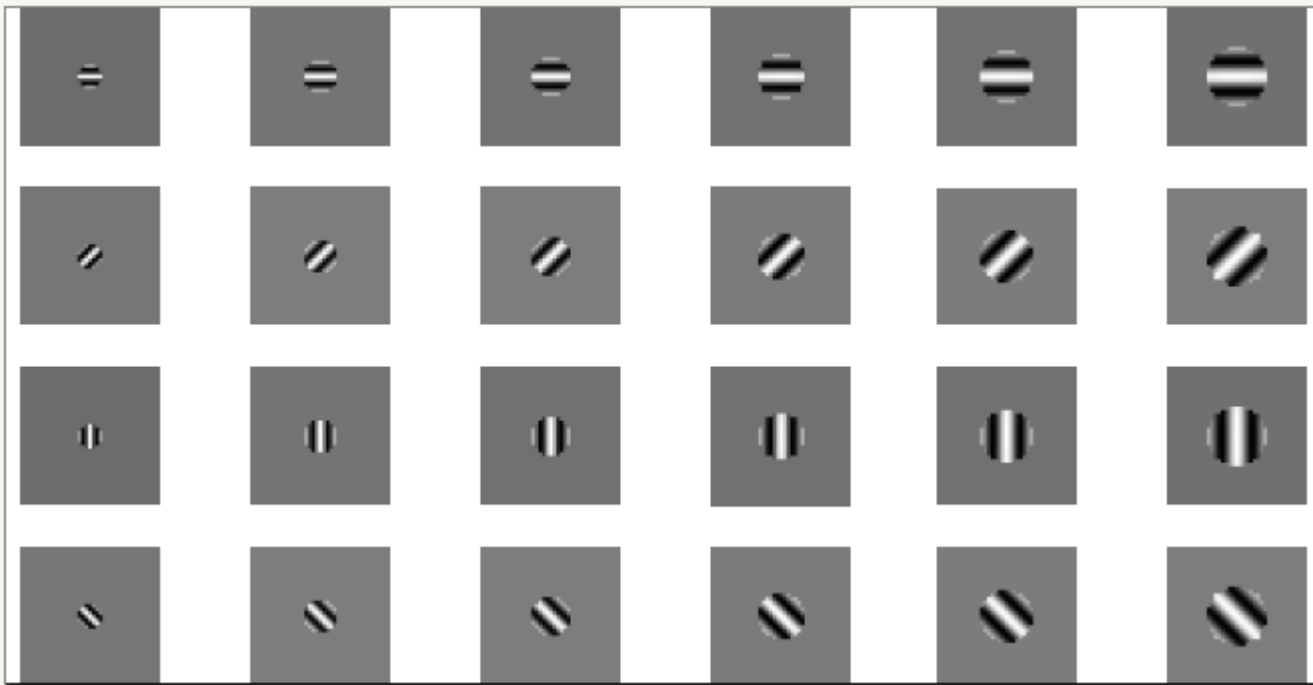
dorsal stream 'where' pathway | ventral stream 'what' pathway



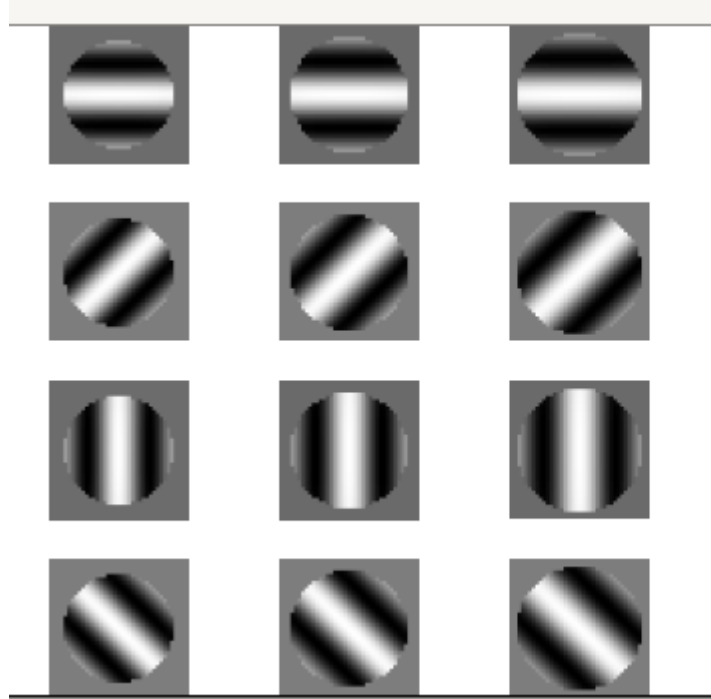
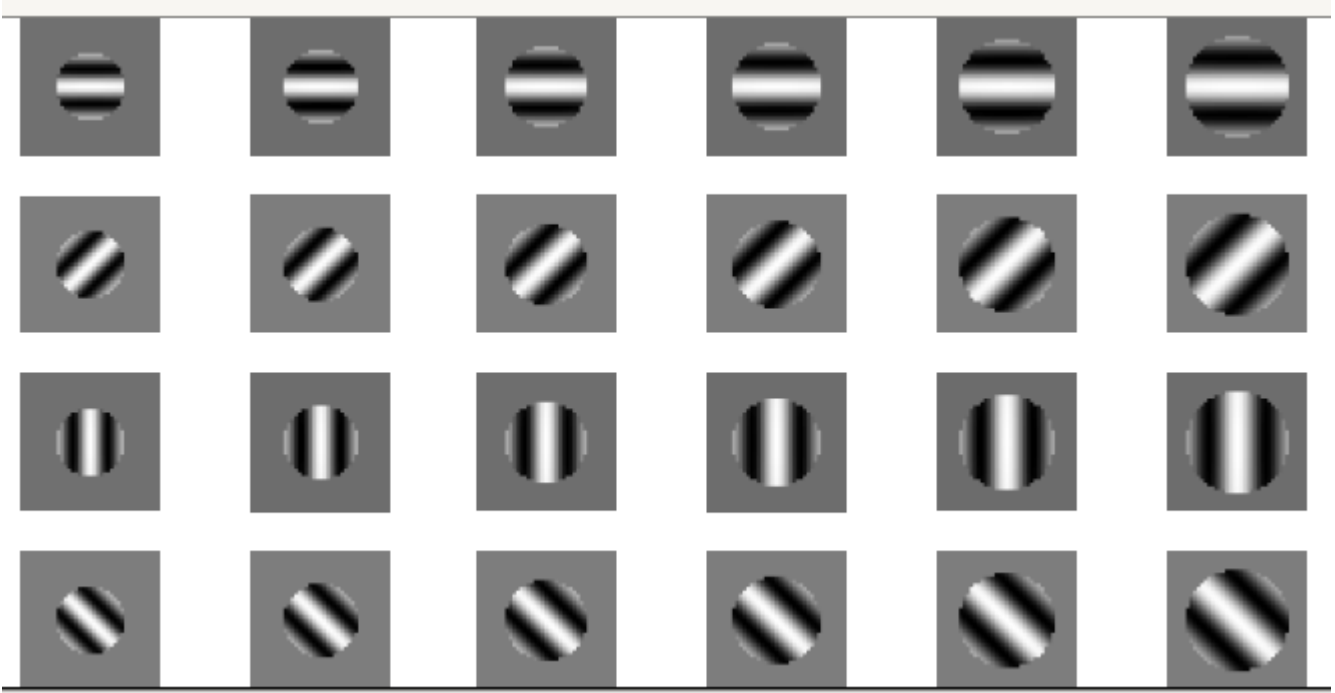
Model layers	RF sizes	Num. units	
classification units		$10^0$	Supervised task-dependent learning
S4	$7^\circ$	$10^2$	
C3	$7^\circ$	$10^3$	Unsupervised task-independent learning
C2b	$7^\circ$	$10^3$	
S3	$1.2^\circ - 3.2^\circ$	$10^4$	
S2b	$0.9^\circ - 4.4^\circ$	$10^7$	
C2	$1.1^\circ - 3.0^\circ$	$10^5$	
S2	$0.6^\circ - 2.4^\circ$	$10^7$	
C1	$0.4^\circ - 1.6^\circ$	$10^4$	Increase in complexity (number of subunits), RF size and invariance
S1	$0.2^\circ - 1.1^\circ$	$10^6$	

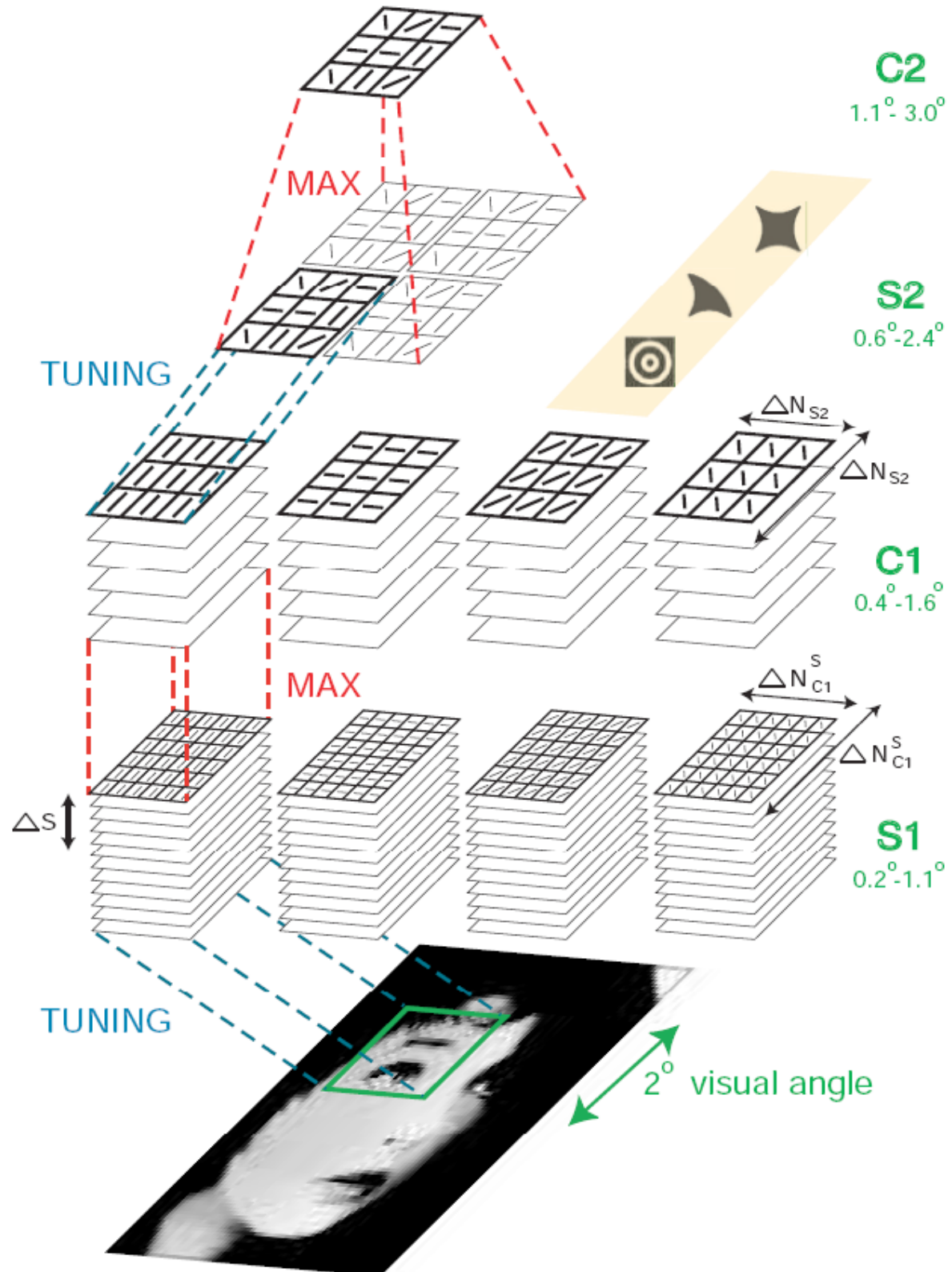


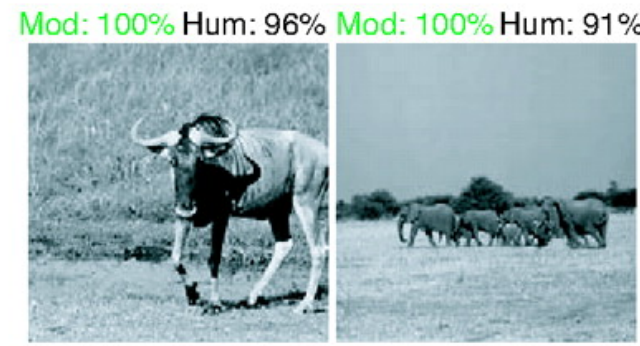
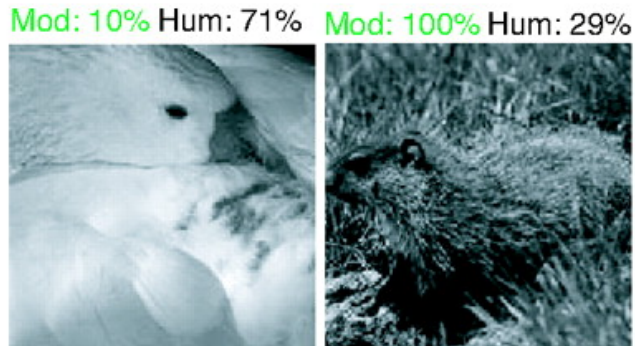
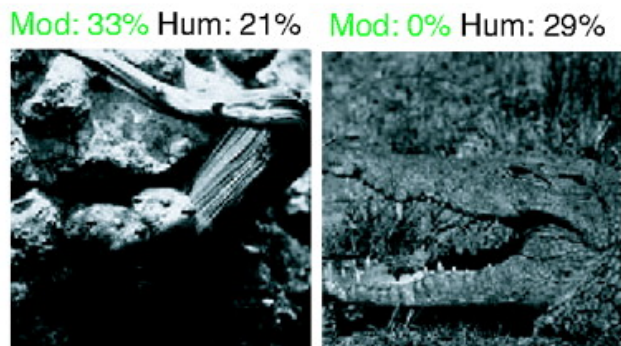
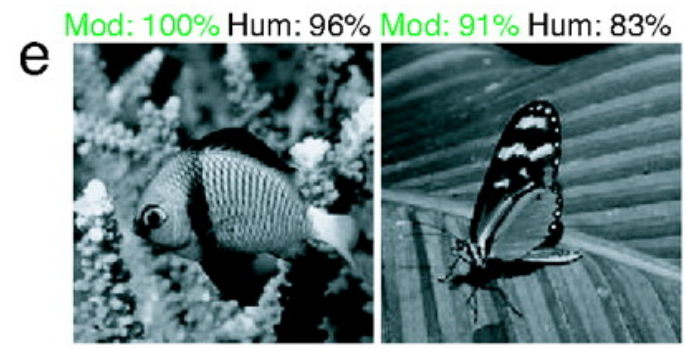
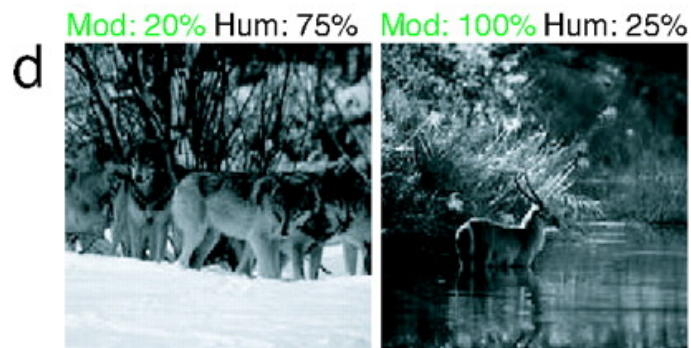
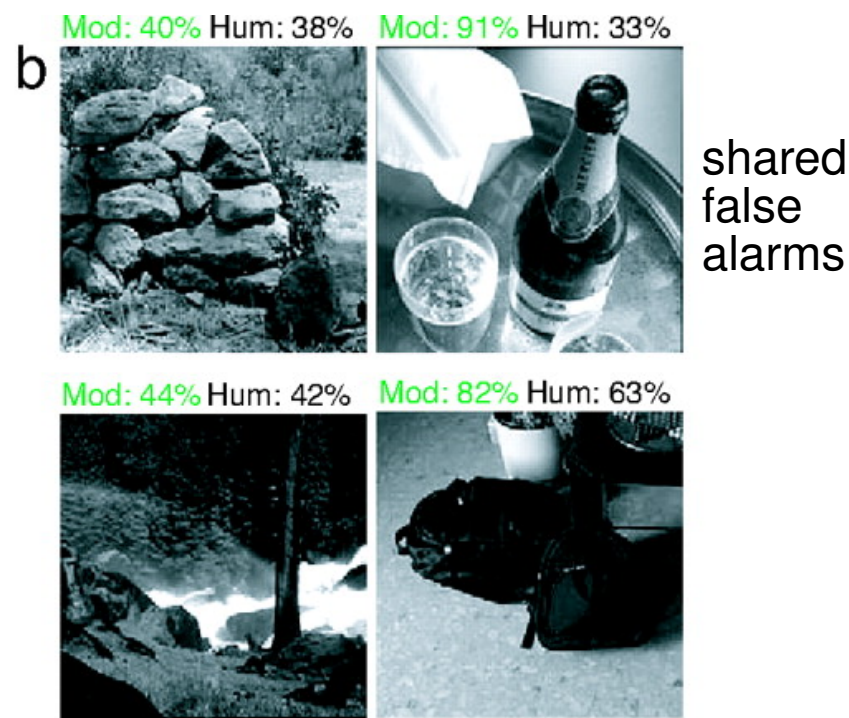
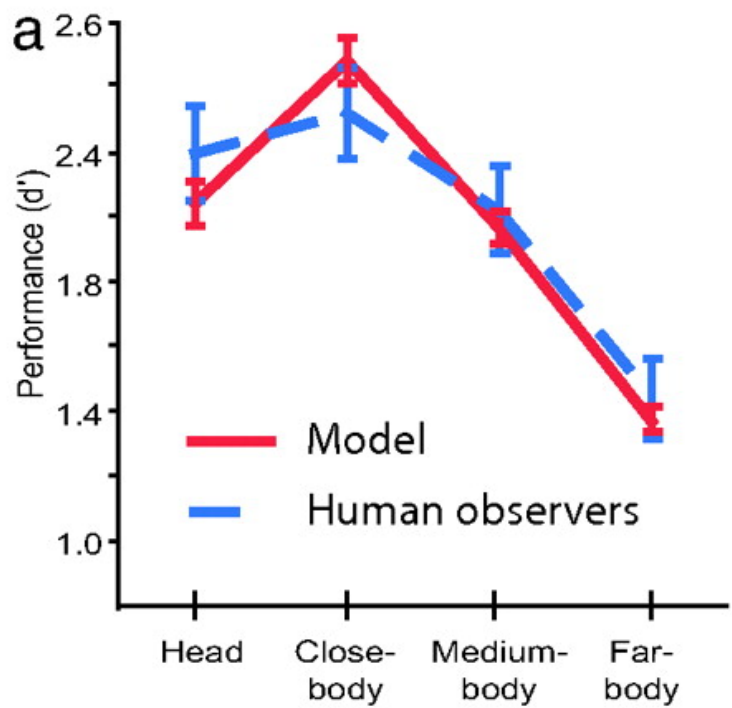
Serre, Oliva, & Poggio  
PNAS, 2007



**S1 Units**  
 2 phases (1 shown)  
 4 orientations  
 17 sizes (15 shown)







shared misses

poor agreement

good agreement

# Recognition Under Rotation

