Object Recognition in Temporal Cortex
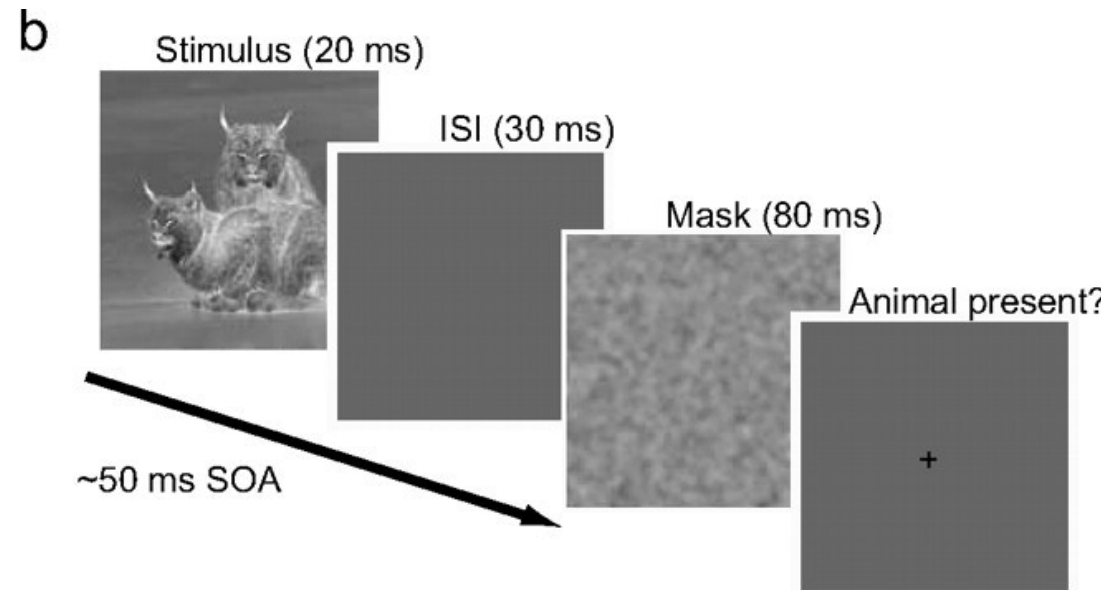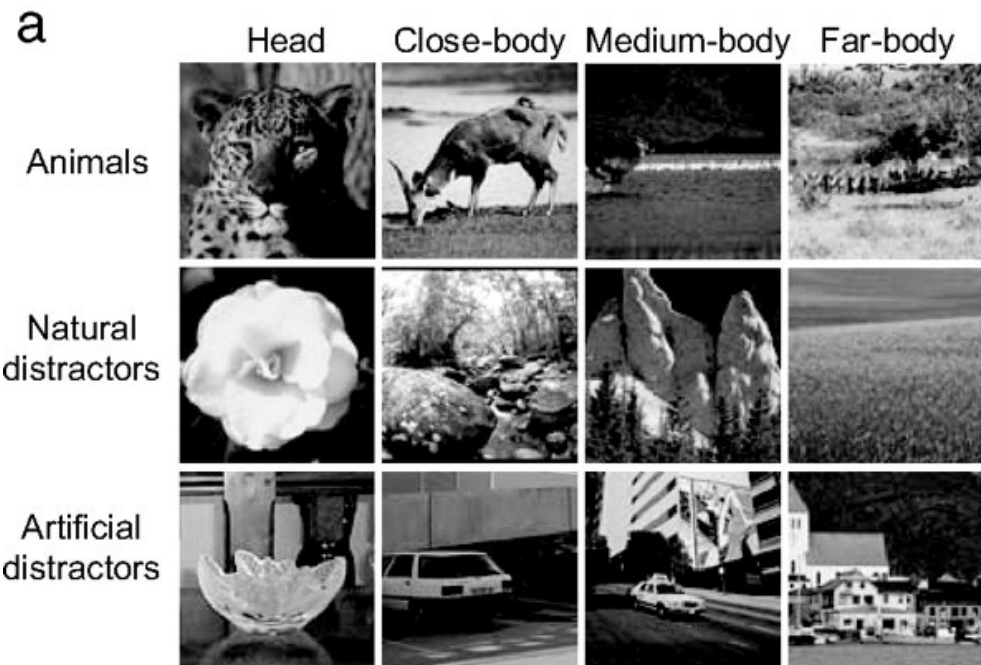
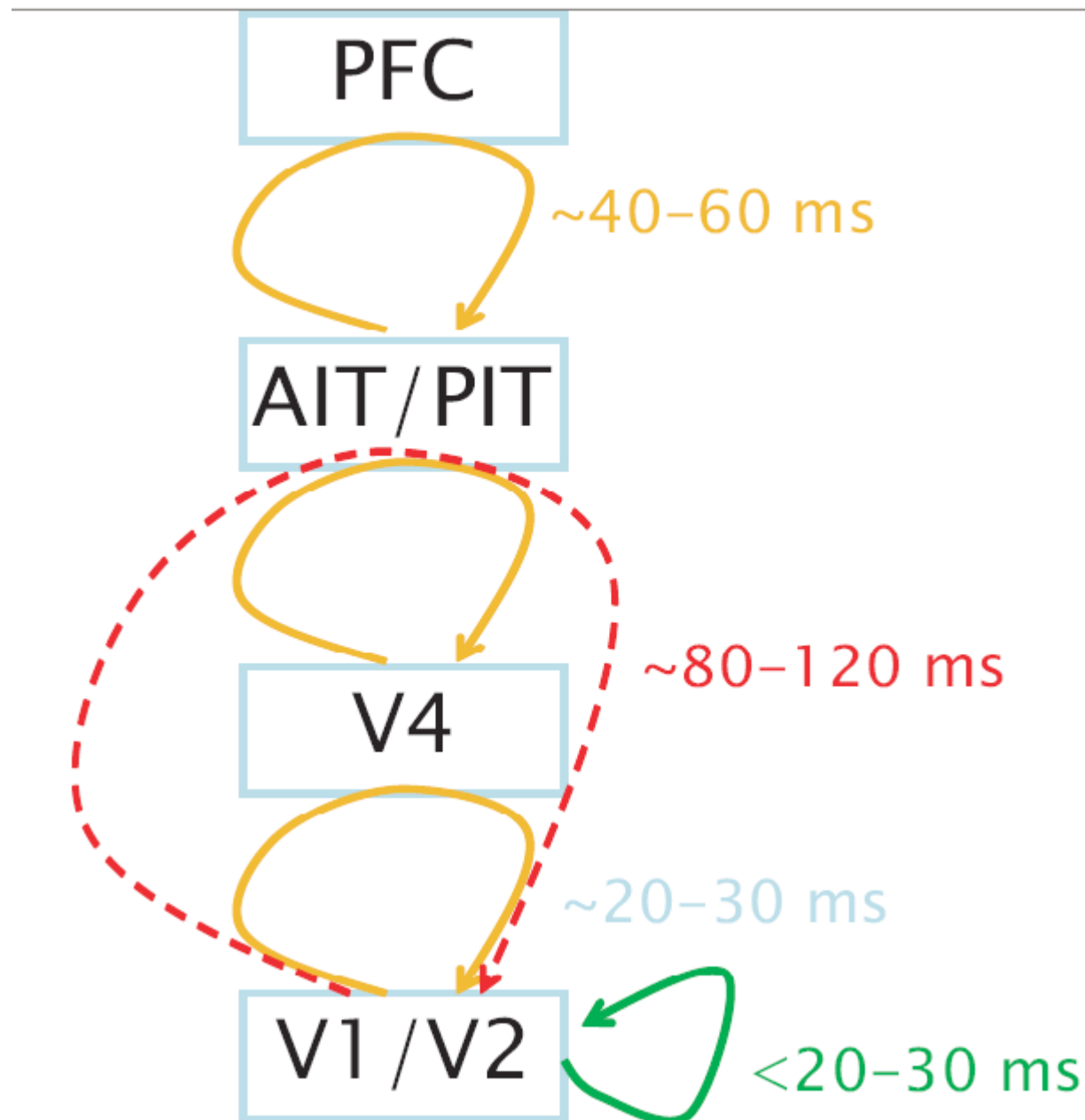## Computational Models of Neural Systems
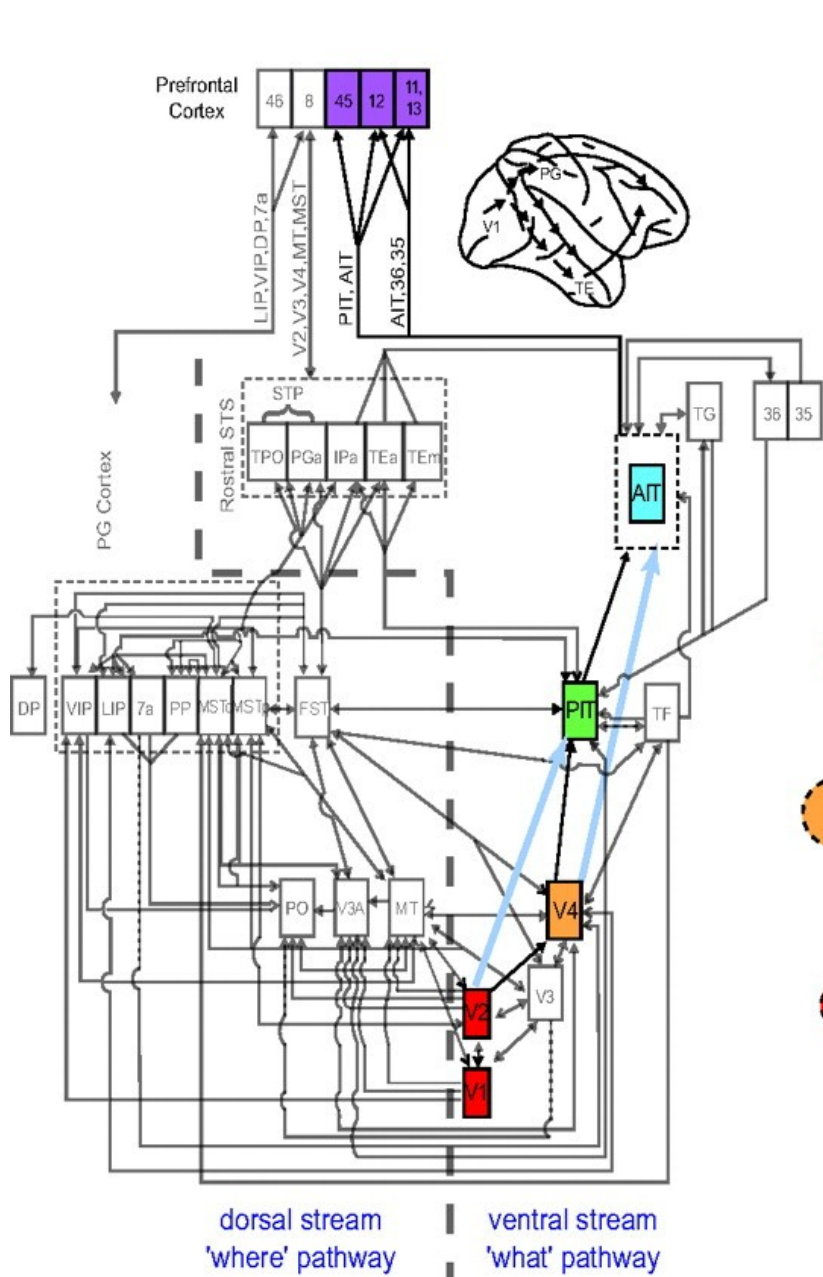### Lecture 8.2

David S. Touretzky
December, 2015

From Serre, Oliva, & Poggio (2007)

Timing of Feedback Loops: Monkeys & Humans

Serre, Oliva, & Poggio
PNAS, 2007
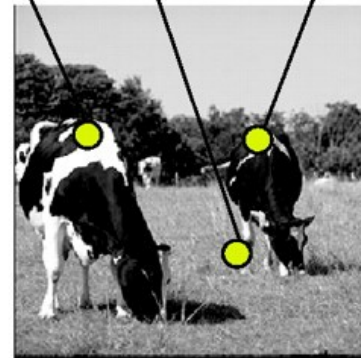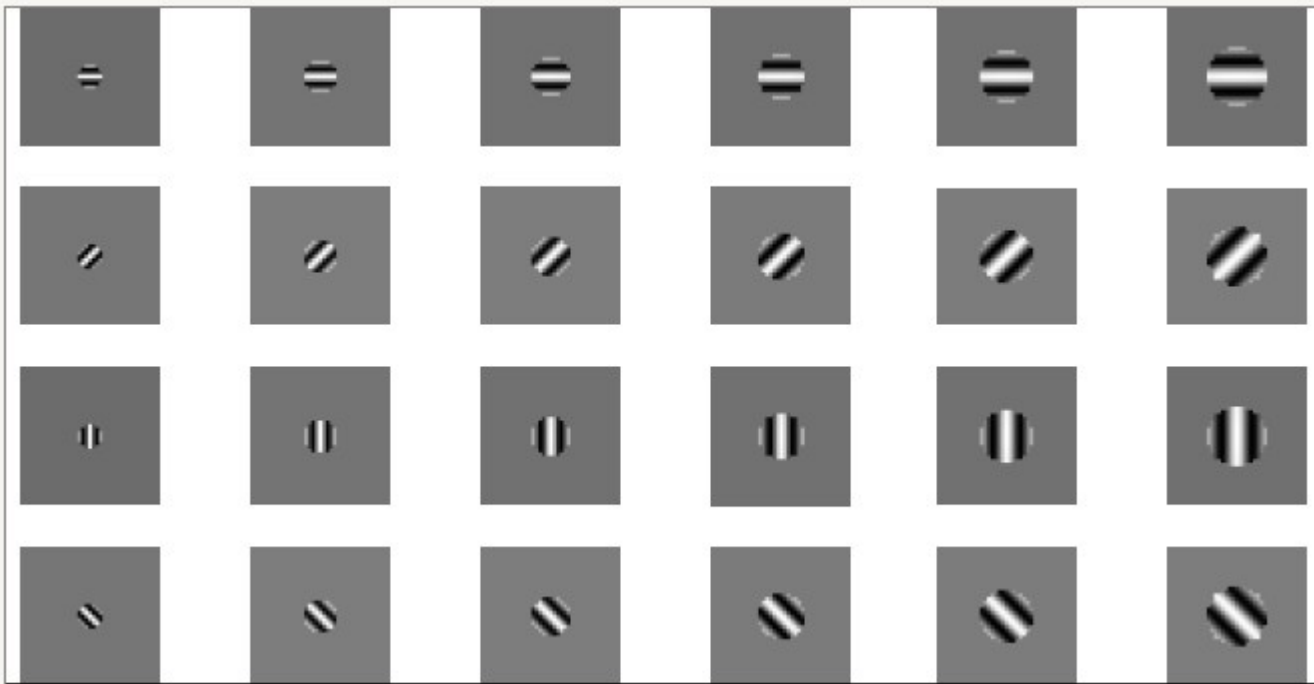
S1 Units

2 phases
4 orientations
17 sizes (15 shown)

C2
1.1° - 3.0°

MAX

S2
0.6° - 2.4°

TUNING

$\triangle N_{S2}$

$\triangle N_{S2}$

C1
0.4° - 1.6°

MAX

$\triangle N_{C1}^{S}$

$\triangle N_{C1}^{S}$

$\triangle S$

S1
0.2° - 1.1°

TUNING

2° visual angle

a

b
Mod: 40% Hum: 38% Mod: 91% Hum: 33%
Mod: 44% Hum: 42% Mod: 82% Hum: 63%

c
Mod: 22% Hum: 21% Mod: 0% Hum: 21%
Mod: 33% Hum: 21% Mod: 0% Hum: 29%

d
Mod: 20% Hum: 75% Mod: 100% Hum: 25%
Mod: 10% Hum: 71% Mod: 100% Hum: 29%

e
Mod: 100% Hum: 96% Mod: 91% Hum: 83%
Mod: 100% Hum: 96% Mod: 100% Hum: 91%
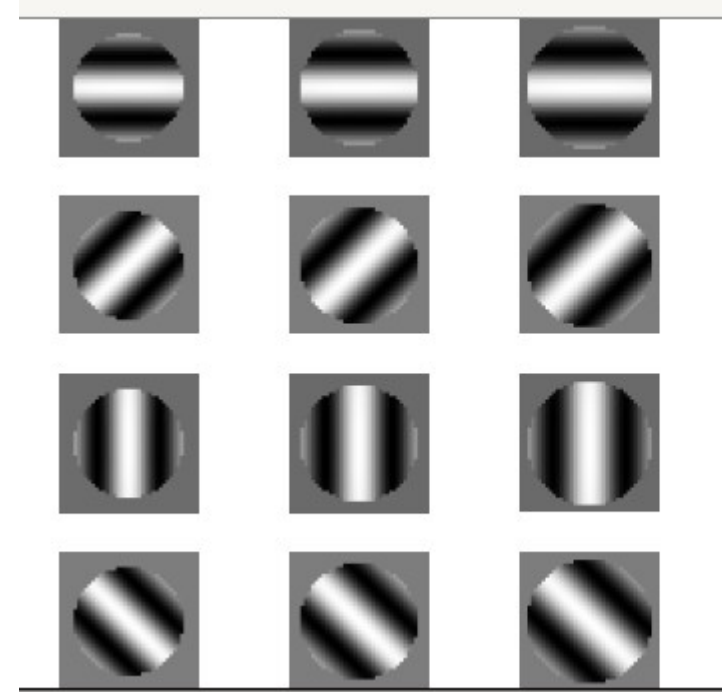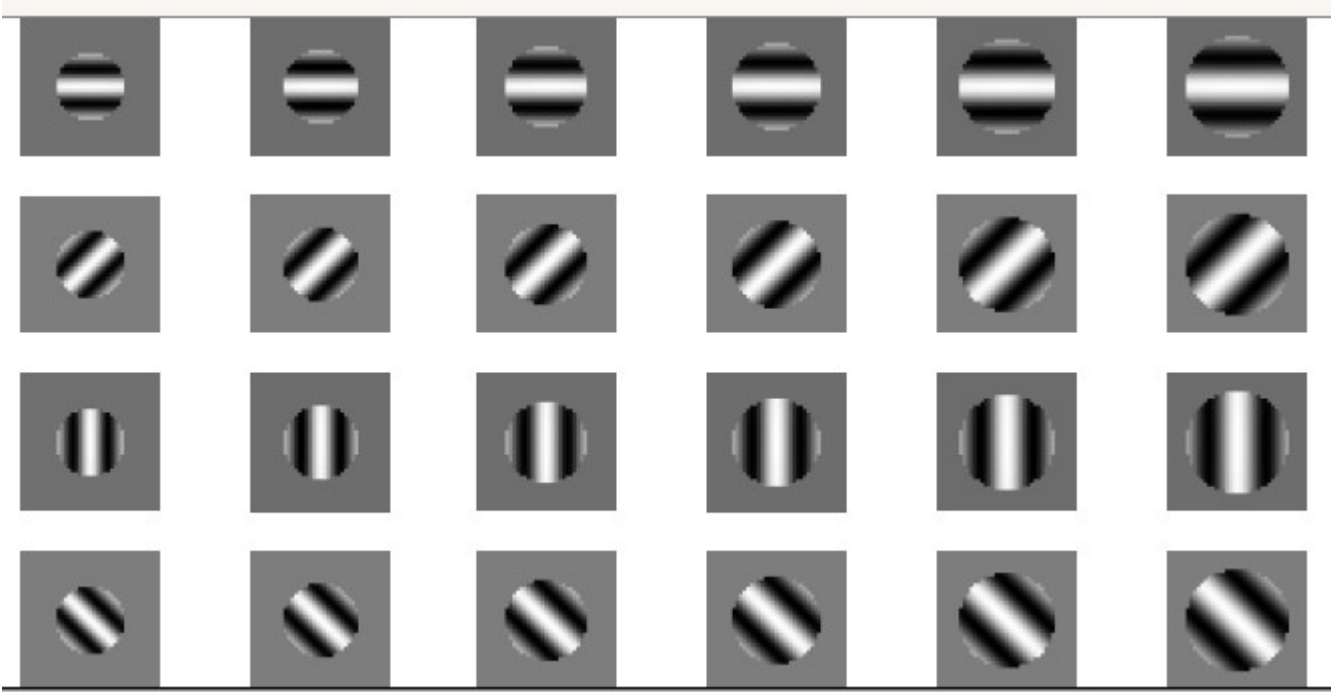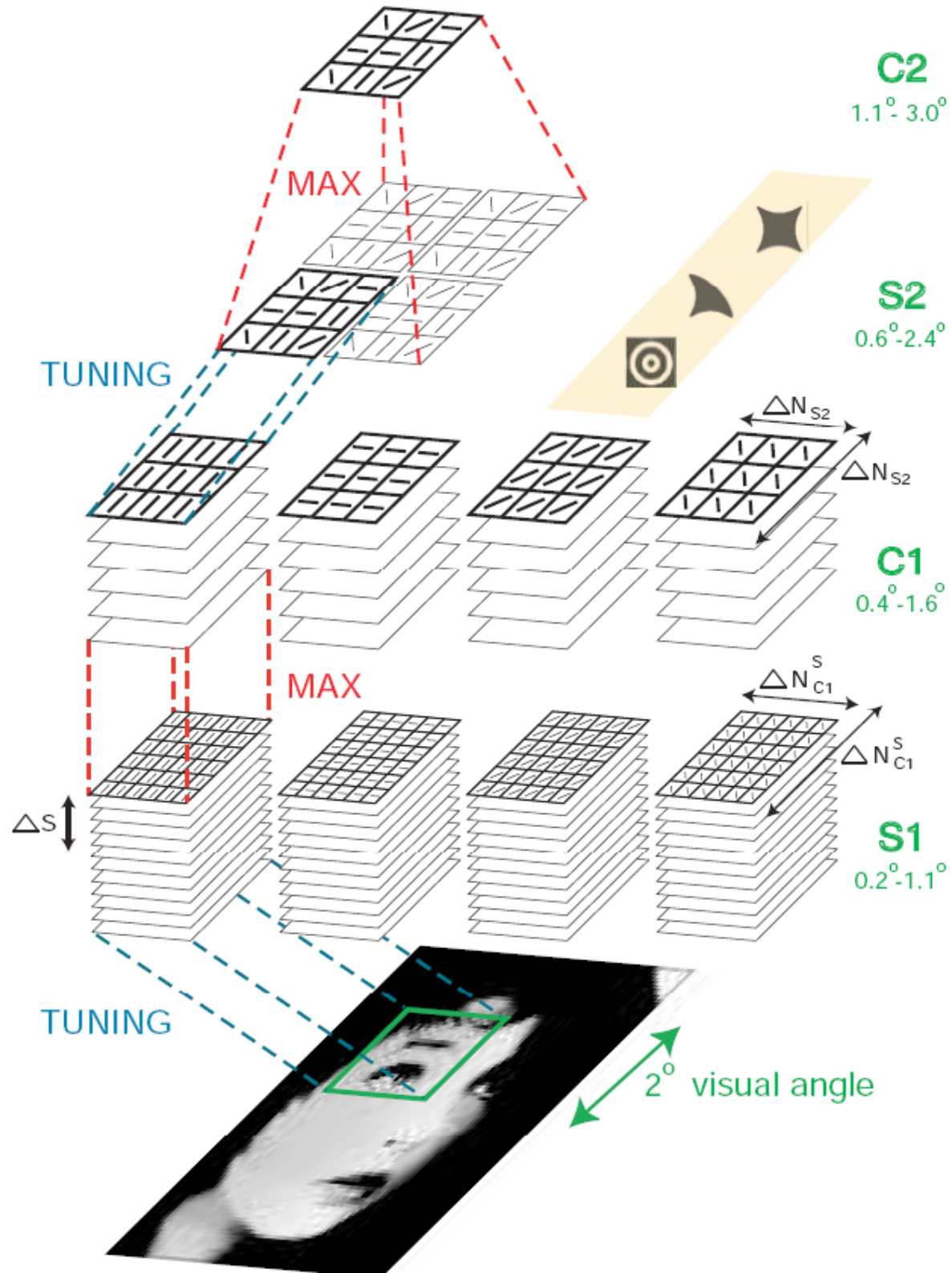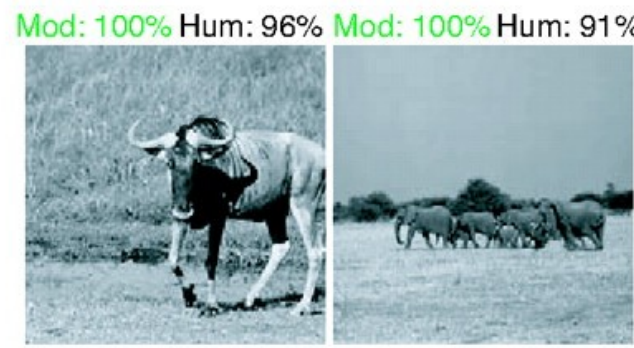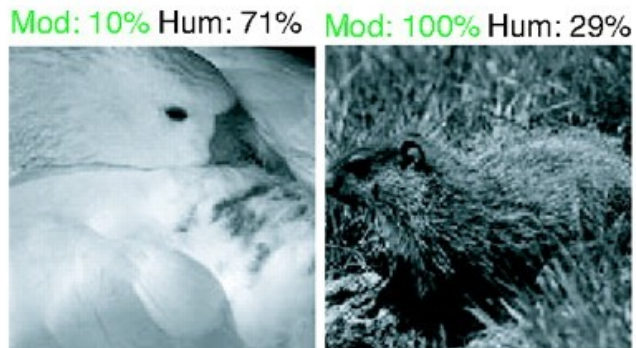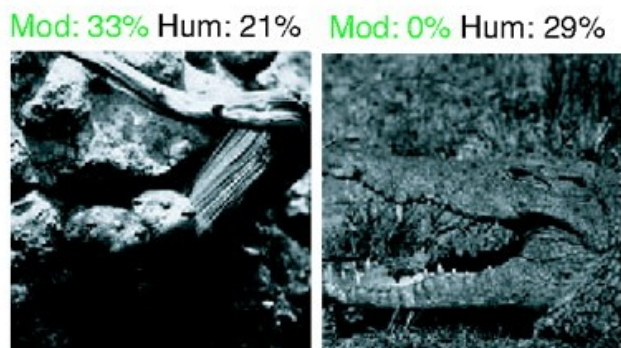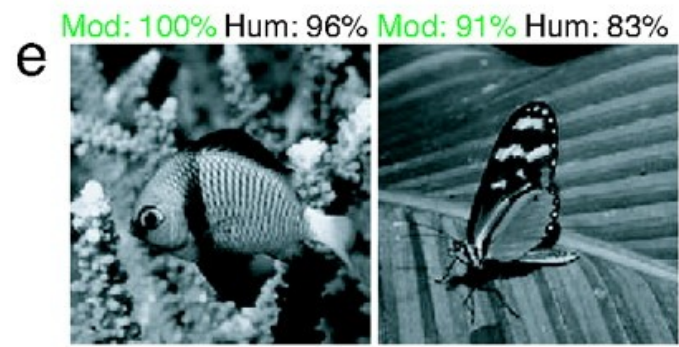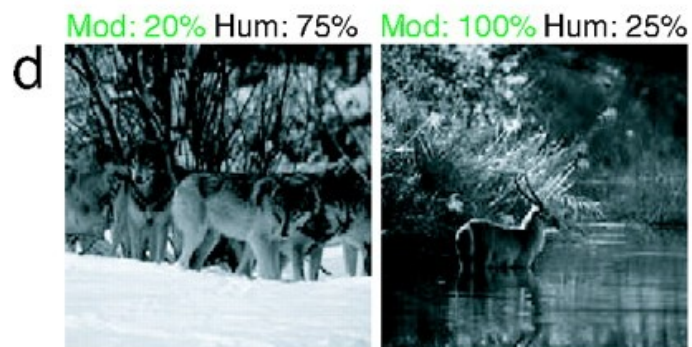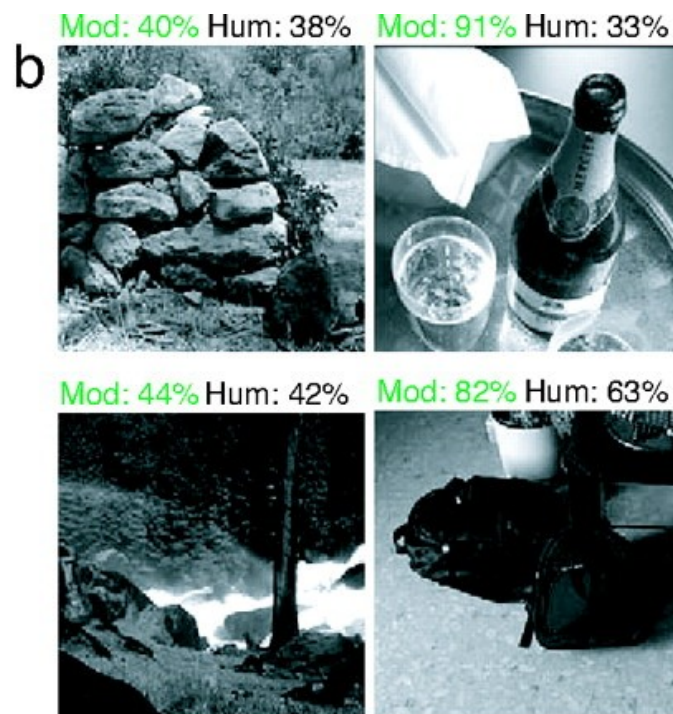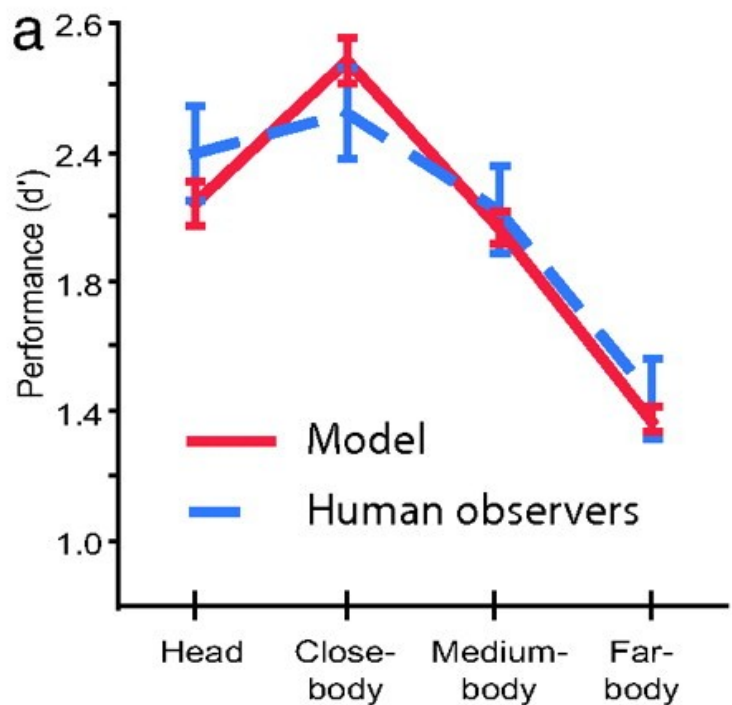
Recognition Under Rotation

Performance (d')

Legend:
- Human observers (dashed blue)
- Full model (red)
- Direct route only (bypass lesioned) (cyan)
- Bypass route only (V4 lesion) (green)

X-axis: Head, Close-body, Medium-body, Far-body