

## Figure S1: Example pattern and component predictions based on streaming stimulus set. Related to Figure 5.

Pattern and component predictions for two PSS neurons, computed based on responses to the large plaid stimulus set. The figure shows responses (upper row), component predictions (middle row) and pattern predictions (bottom row) for a pattern (left column; same neuron as in Figures 5C & 6B) and component cell (right column; same neuron as in Figure 6B).  $Z_c$  and  $Z_P$  for both neurons are indicated in the plots.



## Figure S2: PSS receptive field estimation using gratings. Related to STAR Methods.

- (A) Example response of a PSS neuron to gratings of different sizes drifting in the neuron's preferred direction (error bars: ± SEM). The receptive field size of the neuron (indicated by \*) was estimated as the smallest stimulus size that elicited a response of at least 80% of the maximum response (dotted line).
- (B) Estimated receptive field radius across all recorded PSS neurons. The median receptive field radius for our population of PSS neurons was 15 degrees. For eccentricities up to 10 deg, the radius of macaque MT receptive fields falls below 5 deg [S1–3].

## Supplemental References

- S1. Albright, T.D., and Desimone, R. (1987). Local precision of visuotopic organization in the middle temporal area (MT) of the macaque. Exp. Brain Res. *65*, 582–592.
- S2. Gattass, R., and Gross, C.G. (1981). Visual topography of striate projection zone (MT) in posterior superior temporal sulcus of the macaque. J. Neurophysiol. *46*, 621–638.
- S3. Maunsell, J.H.R., and Essen, D.C. van (1987). Topographic organization of the middle temporal visual area in the macaque monkey: Representational biases and the relationship to callosal connections and myeloarchitectonic boundaries. J. Comp. Neurol. 266, 535–555.