



Supplementary Figure 1. Orientation maps were not due to eye movements. In one orientation mapping session, we measured gaze positions during the fMRI experiment; corresponding fMRI data from this session are shown in Figure 1a. 99% of gaze positions were within 1.5 deg of the center visual field. Each dot corresponds to a period of stable fixation, and the color of each dot indicates the stimulus orientation during that period of fixation. There was no evidence for a circular correlation between the polar angle of fixations and the orientation of the stimulus ($r_c = -0.027$, $P = 0.1220$).