

## **DESCRIPTION OF ADDITIONAL SUPPLEMENTARY FILES DOCUMENT**

**Supplementary Movie 1:** 3D reconstructed mouse whisker array overlaid with the visual space covered by the primary visual cortex (VISp, bright red space). Whiskers were aligned to a realistic model of the mouse head (Bolanos et al., 2021) and the visual space was constructed based on data from Zhang et al., 1017.

**Supplementary Movie 2:** Simulated whisker retraction ( $-40^\circ$ ) and protraction ( $+40^\circ$ ). Whiskers were aligned to a realistic model of the mouse head (Bolanos et al., 2021).

**Supplementary Movie 3:** Whisker protraction leads to a convergence of the whisker search space with the visual space modulated by the whiskers themselves. Brighter red space: Modulated visual space extension caused by eye movements ( $\pm 20^\circ$ ). Darker red space: Modulated visual space. Turquoise whiskers indicate the ones identified to be important for tacto-visual integration in primary visual cortex (VISp). Whiskers were aligned to a realistic model of the mouse head (Bolanos et al., 2021).