

**Title:** Supplementary Movie 1

**Description:** Demonstration of four-view mouse video capturing and 3D tracking

**Title:** Supplementary Movie 2

**Description:** Demonstration of behavior decomposition

**Title:** Supplementary Movie 3

**Description:** Demonstration of behavior mapping with low-dimensionality embedding

**Title:** Supplementary Movie 4

**Description:** Test in square open field

**Title:** Supplementary Movie 5

**Description:** Test in sociability cage

**Title:** Supplementary Movie 6

**Description:** 3D tracking 2 mice with different appearances

**Title:** Supplementary Movie 7

**Description:** 3D tracking 2 mice with similar appearances