**Supplementary Video Legend.**

As shown in supplementary video 1, the forelimb movement was only generated during the stimulation-on time and synchronized to the LCN stimulation.

Anatomically, the DTC pathway begins from the dentate nucleus, running through the superior cerebellar peduncle, and then completely decussate when arriving to the contralateral red nucleus and thalamus then finally ascend to the cortex. Second decussation occurs when the descending corticospinal tract cross at the midbrain and then arrive to the ipsilateral periphery19. On the contrary, if the cerebello-olivary fibers arising from the dentate nucleus to opposite inferior olivary nucleus are stimulated, contralateral cerebellar hemisphere will be activated, resulting in the contralateral periphery movement. Surprisingly, it came to our attention that each cerebellar hemisphere is capable of inducing bilateral motor output which has been previously explained by finding non-decussating projections from the dentate nucleus (i.e. LCN) to the ipsilateral red nucleus and thalamus in monkeys. This has been validated in connectome-based tractography20, functional magnetic resonance imaging (fMRI)21,22 and repetitive transcranial magnetic stimulation (rTMS)23 studies in human and also in monkey lesion study24

On the other hand, due to the small head size of the mouse, the brain stem could possibly be stimulated. In fact, stimulating brain stem has been shown to elicit complex motor behaviors28,29. Also, stimulation on trigeminal nerve fibers, which project to the multiple brain stem nuclei, has shown to be capable of reducing brain edema by controlling the systemic vasomotor activity.30

Previous studies26,39 stimulated neural areas near to cerebellum or part of cerebellum and observed different motor effects compared to our experimental results. Even with the mm-scale changes of the transducer on the skull surface, the location of full-width at 90%-maximum of the AI field (which actually induce neuromodulation effect) can target totally different cell types, hence the different motor outcome. Aforementioned studies targeted either a bit more proximal to the bregma or deeper brain region compared to our study. Also regarding the mouse genetic background, both studies used C57BL/6 mice whereas in our study ICR mice were used.