Abstract

* Talking about motor movement
* Investigating impact of dynamic movement such as reach & grasp on neural activity in the motor & pre-motor cortex
* Measured correlation of temporal neural activity with different defined events.
* Conclude hand movement has the largest effect on neural activity.
* Pressure & Direction

Introduction

* Papers
* Hypothesis

Dataset

Methods

Experimental Results

Discussion

Abstract:

Single-neuron responses in motor cortex are complex, and there is marked disagreement regarding which movement parameters are represented. PAPER 2

On the one hand, it is not clear that there need be any straightforward relationship. On the other hand, a large body of work has stressed the simple relationship between the measured responses of motor cortex neurons and kinematic parameters such as reach direction and speed. PAPER 1

This has been done in the context of the center-out reaching task (Moran and Schwartz 1999b).

**Abstract**

**Introduction**

Body movement involves a range of complex actions, especially in primates. Over the years, different regions of the cortex have been associated with motor actions, which are three areas of the frontal lobe: the premotor cortex, primary motor cortex, and supplementary motor area. Moreover, a substantial amount of studies has turned their attention to hand movements. Various aspects and parameters, such as speed, force, direction, etc., contribute to this unique motion.

Until now, the majority of research has focused on the spatial tuning of movement-related areas. However, there hasn’t been sufficient evidence regarding the temporal responses of the motor cortex and the role of individual neurons in coding movement parameters. On the one hand, it is not clear that there need be any straightforward relationship between neural responses and movement parameters. Meanwhile, some studies have shown a simple relationship between the measured responses of motor cortex neurons and kinematic parameters like reach direction and speed. [PAPER 1]

We have addressed these issues by analyzing electrophysiological recordings made during a delayed reach-to-grasp task from the motor cortex of a male macaque monkey. This experiment is done in four types of tasks, different in direction & force of grasp. Each task consists of a handful of events that have been manually timestamped and allow us to investigate neural responses concerning the time of these events. Also, through examining single neuron activities in each type of grasp, we inspect the notion of aspects like force & direction, being coded by individual neurons. All these analyses are done by statistical testing on two key features, extracted from spike trains; firing rate & Fano factor.