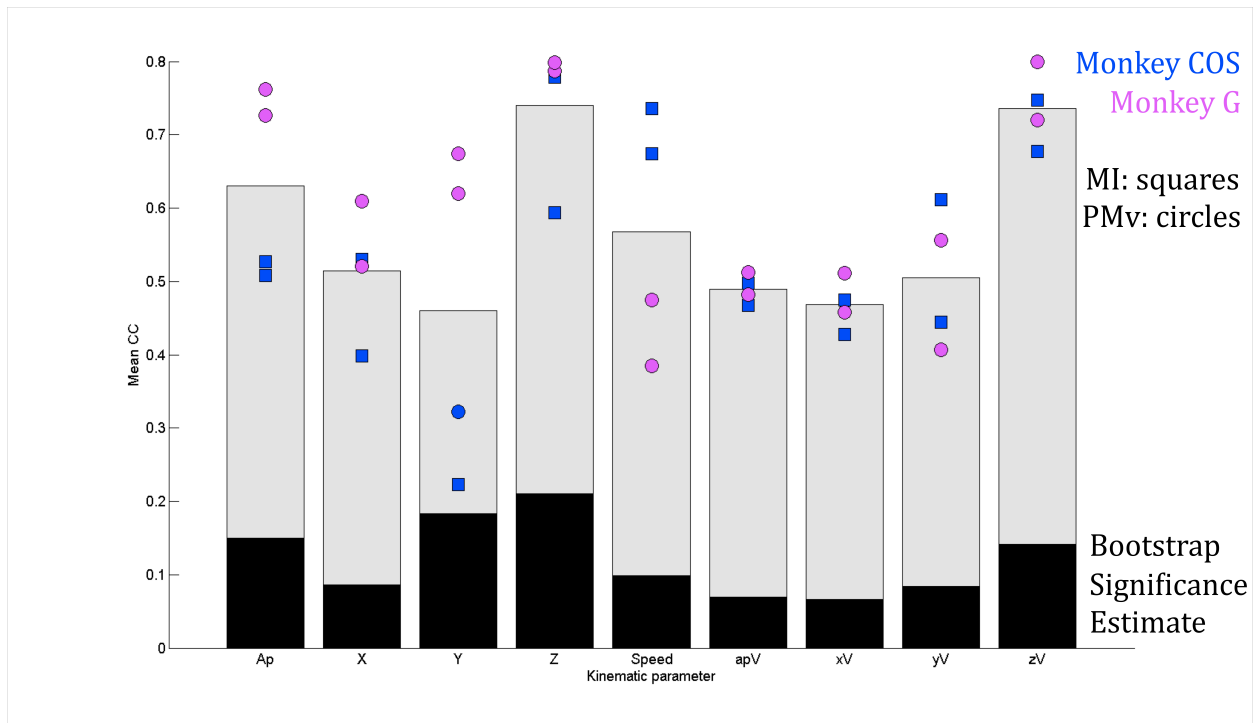
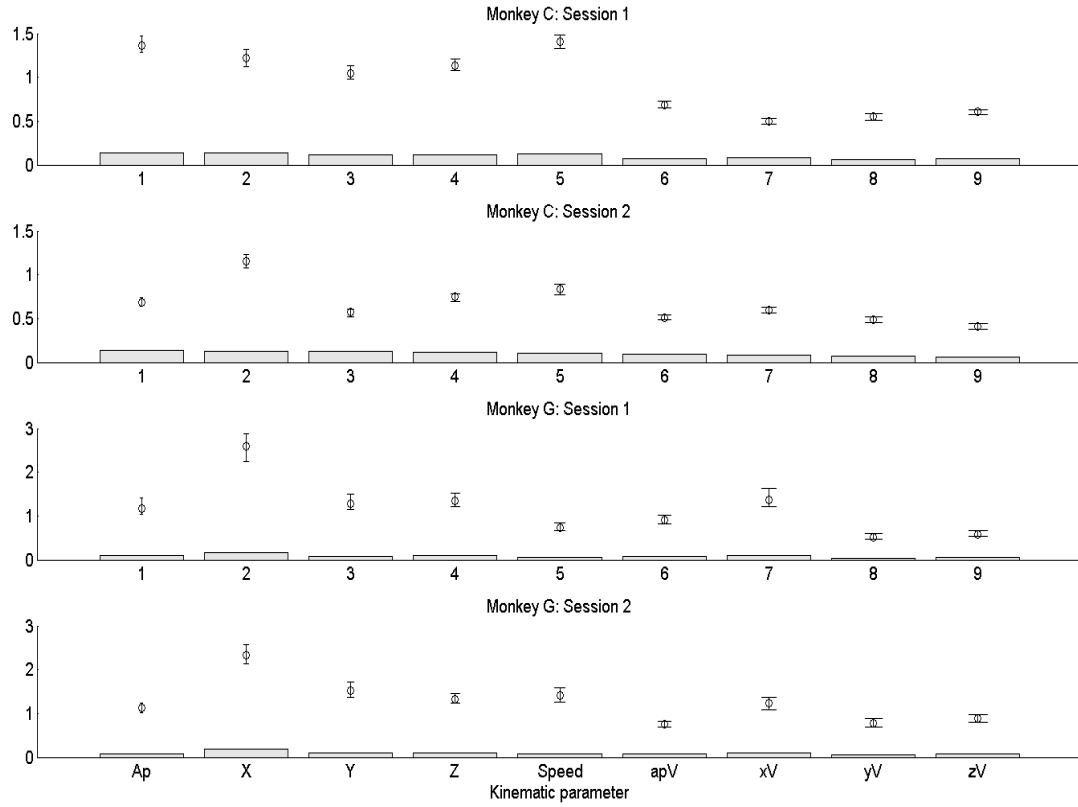


**Supplementary Table 1: Total number of single units recorded in the two sessions in monkeys C and G. The monkeys were implanted on 11/30/2007 and 6/2/2008 respectively.**

	<b>MI</b>	<b>PMv</b>
<b>Monkey C, Session 1 12/12/07</b>	136	99
<b>Monkey C, Session 2 3/19/08</b>	115	142
<b>Monkey G, Session 1 7/2/08</b>	76	171
<b>Monkey G, Session 2 7/10/08</b>	30	108



**Supplemental Figure 1a: Summary of decoding performance using the Kalman filter, with no low-pass filter on kinematics.** Cross-correlation of original and decoded kinematics in 2 monkeys in 2 sessions using lf-LFP from all recorded LFP channels from 2 areas. The cross-correlation for the area that gave better cross-correlation for each session for each kinematic parameter is plotted (Blue: Monkey COS; Magenta: Monkey G; squares: MI; circles: PMv). Bars represent mean cross-correlation for each kinematic parameter across monkeys and across sessions. Black bars represent the maximal range of the cross-correlation that was observed by using a phase-randomized *lf*-LFP signal for decoding the same kinematics for all the sessions (100 iterations x 4 sessions).



**Supplementary Figure 1b: The bootstrap significance estimates for the root mean squared errors plotted in Figure 2b.** The bars represent the observed root mean squared error. The errorbars represent the range of the root mean squared error values observed by using a phase randomized version of the *lf*-LFP (100 iterations/ kinematic parameter/ session).