

<b>Project Title</b>	Movement and neural variability in real-world motor tasks
<b>Supervisor(s)</b>	Dr Shlomi Haar (Department of Brain Sciences)
<b>Themes</b>	Biomedical Sensing Diagnostics and Imaging Neurotechnology and Robotics
<b>Project Type</b>	Lab based
<b>Project Description</b>	<p>Neural activity and movement kinematics are remarkably variable. While repeating the same movement, for example reaching to the coffee cup for taking a sip, each repetition would be slightly different. In a simple reaching task, individual subjects exhibit different magnitudes of kinematic variability, which are consistent (within individual) across movements (Haar et al. 2017 JNeurosci). The same subjects also exhibited different magnitudes of neural variability which partially explained their movement variability. Hence, neural and kinematic variability are reliable and interrelated individual characteristics that may predispose individual subjects to exhibit distinct motor capabilities (Haar et al. 2017 JNeurosci).</p> <p>In this project, we will try to generalise those findings to the real world and with patient groups. The project will run in the Living Lab of the UK DRI Care Research and Technology Centre. This is a domestic studio flat with passive movement sensors, providing a bridge to research 'in the wild'. We will record body movement and EEG brain activity of healthy subjects and neurological patients as they perform repeated trials of daily tasks (e.g. making tea) and analyse the neural activity and movement kinematics variability patterns and their relation to neurological conditions.</p>