

## **“The Flexible Deployment of Memory Resources”**

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We have multiple memory resources at our disposal: We can actively maintain a few chunks of information in working memory (via sustained neuronal firing), and we can stash away information into our vast repository of past experiences in long-term memory (via synaptic changes). In my research, I am exploring how these processes interact with one another, and how we dynamically deploy these resources in the service of task performance. The recent melding of neuroimaging with machine learning techniques has enabled me to “peek under the hood” and test psychological theories in powerful new ways. By reading out moment-to-moment information trajectories in the brain, I am able to reevaluate core assumptions of memory that have been speculated on for decades. For example: In short-term memory tasks where people can use active maintenance (in working memory) to remember information, do people sometimes use long-term memory instead? If so, when? Does holding information in working memory increase our ability to access that information later on, or can this paradoxically lead to forgetting? In this talk, I will briefly summarize some work that I have completed using this approach, and then I will describe extensions of this work that should provide fresh insights into the cognitive and neural bases of memory.