Simulating a working memory in a delayed match-to-sample task: A computational model based on a LSTM deep neural network

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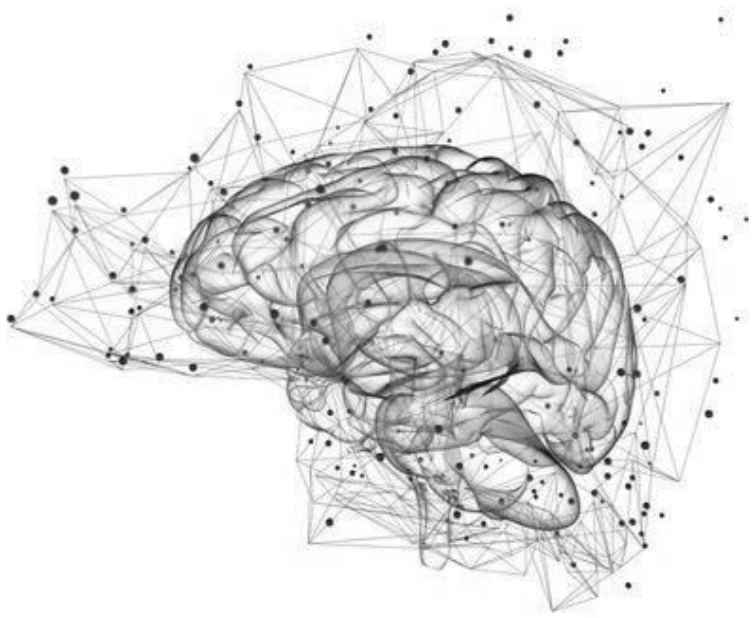
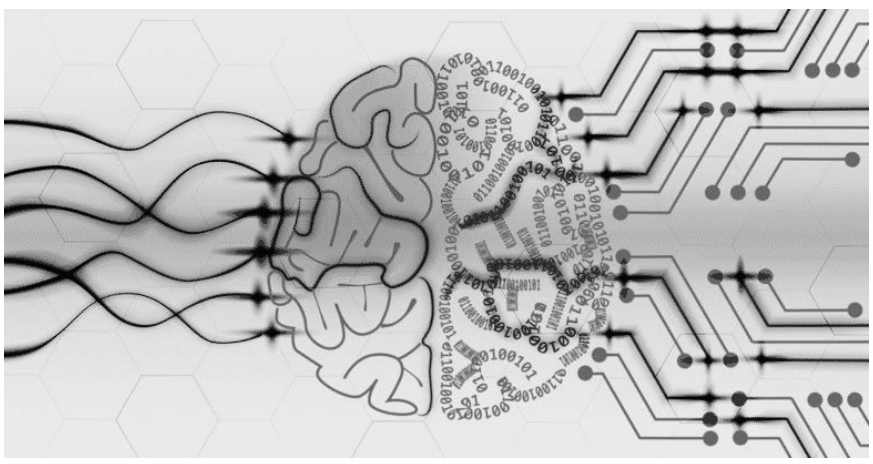
Topic

- Working memory is a key process of executive functions. In the brain, it relies on recurrent neural networks.
- The deep neural network here presented models its functioning trying to better understand it.





Problem

- The specific mechanisms through which working memory works, in particular how it manipulates its contents (e.g., load, stores, unloads, and transforms them) are still not fully clear.

Objectives

- A computational model could permit the formulation of operational hypotheses on the neural mechanisms underlying the working memory functioning and its role in executive functioning.
- To this purpose, in this project a deep neural network involving a Long-Short Term Memory (LSTM) is trained to target the processes of working memory as measured in a match-to-sample task.