

Dynocog

A cognitive science research unit focused on the application of advanced statistical & deep learning methodology to deconvolve human cognition.



On the Variation in Cognitive Performance, Learning & Attention.

A Bayesian Reinforcement Learning Paradigm to Capture the Variation across Cognitive Executive Functions.

Team of experts

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Deep Reinforcement Learning
Neuropsychology
Bayesian Statistics
Statistical/Machine Learning

Machine Learning Paradigm

The appropriate model constitutes a multitude of advanced statistical idea. Reinforcement learning is utilised to mimic human value approximation; A graphical model structure is leveraged to understand the dependency between covariates; & Hierarchical Bayesian methods are used to capture variation across individuals.

Experimental Design

We've selected a task battery of neuropsychological experiments, chosen to measure the interaction between executive functions.

Task battery selected:

- Wisconsin card sorting task
- Navon task
- Corsi block task
- N-back task
- Fitts task

Implementation

The experiments are implemented through PsyToolkit, & the machine learning instance is developed in Python; heavily dependent on Pyro (probabilistic inference) & PyTorch (gradient based optimisation).

Connect with us:

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