Hi everyone and thank you for stopping by

My name is Oscar Miranda-Domínguez, and I am presenting a Matlab toolbox to use Brain-Wide Associations to quantify relationships between brain imaging and non-imaging data.

This is an implementation of the methodology proposed by Zhao and colleagues

This short video has 3 sections:

* Rationale behind the approach
* Link to the repo,
* Screenshots of outputs generated by the code

Rationale

* The **challenge** of mathematical modeling is to unveil **real** **associations** between variables. Yeah, this fact is well known.
* Association between brain function and behavior might be dominated by small effects and the “brain features” supporting a given behavior might be globally distributed across the entire brain, as opposed to be focalized as a unique bright spot in the brain.
* To unveil real associations, you need large samples and an analytic framework able to look for global patters across the entire cortex.
* Interestingly, this scenario is remarkably similar to the problem our colleagues in the field of genetics solved several years ago.
* Using a large reference sample, they estimated Genetic Wide Associations (GWAS) to look at the cumulative contribution of thousands of genes to estimate the risk of expressing a given disease.
* Resulting models can then be applied on individuals to t

Brain imaging features can be cortical thickness or functional connectivity, for example, while non-imaging data might be behavioral or motor outcomes, academic scores, anesthesia exposure, among others

Closing remarks:

If you are interested, you can see how this work can be applied to study the association between functional connectivity, executive function and ADHD symptom scores using two large datasets. We presented preliminary findings during OHBM. Here is the link to the video and the poster.