HDBIG-NWAS-RP Documentation

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1. Introduction

Recent advances in brain imaging and high throughput genotyping and sequencing techniques enable new approaches to study the influence of genetic variation on brain structure and function. HDBIG is a collection of software tools for high dimensional brain imaging genomics. These tools are designed to perform comprehensive joint analysis of heterogeneous imaging genomics data. HDBIG-NWAS-RP is an HDBIG toolkit focusing on machine learning and enrichment strategies for high dimensional brain imaging genetics. The current version includes R implementation of network GWAS reprioritization for mining high-level imaging genetic associations using NetWAS based module discovery strategy. It can be applied to examine high level imaging genetic associations. See below for a list of relevant papers.

- Yao X, Yan J, Liu K, Kim S, Nho K, Risacher SL, Greene CS, Moore JH, Saykin AJ, Shen L, for the ADNI. (2017) Tissue-specific network-based genome wide study of amygdala imaging phenotypes to identify functional interaction modules. Bioinformatics, 2017 May 29. doi: 10.1093/bioinformatics/btx344.
- Yao X, Yan J, Risacher S, Moore J, Saykin A, Shen L. (2017) Network-based genome wide study of hippocampal imaging phenotype in Alzheimer's disease to identify functional interaction modules. ICASSP'17: The 42nd IEEE International Conference on Acoustics, Speech and Signal Processing, 10.1109/ICASSP.2017.7953342, New Orleans, March 5-9, 2017.

2. License

HDBIG-NWAS-RP uses GNU General Public License (GPL). The license description is included in the software package. Please review and accept the license before installing HDBIG-NWAS-RP via any source.

3. Download

Software

- Available at http://www.iu.edu/~hdbig/NWAS-RP

Documentation

- HTML: http://www.iu.edu/~hdbig/NWAS-RP/HDBIG-NWAS-RP-v1.0.0.html
- PDF: http://www.iu.edu/~hdbig/NWAS-RP/HDBIG-NWAS-RP-v1.0.0.pdf

4. Folder Structure and Demo Examples

The package “HDBIG-NWAS-RP-v1.0.0.zip” consists of two subfolders.

- 01_software: The implementation of the Network-based GWAS reprioritization algorithm; and an example function and simulated data for demonstrating the code.
- 99_license: The license description.

To test the software, perform the following two steps.

- Launch R, go to “01_software” folder.
- Run “example.R”.