

HDBIG-IGEA 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-IGEA is an HDBIG toolkit focusing on high dimensional brain imaging genetics enrichment analysis. The current version includes R implementation of two-dimensional imaging genetic enrichment analysis for identifying high-level imaging genetic associations using enrichment strategy. See below for a list of relevant papers.

- Yao X, Yan J, Kim S, Nho K, Risacher SL, Inlow M, Moore JH, Saykin AJ, Shen L, for the ADNI. (2016) Two-dimensional enrichment analysis for mining high-level imaging genetic associations. *Brain Informatics*. March 2017, 4(1), pp 27–37. doi: <http://dx.doi.org/10.1007/s40708-016-0052-4>.
- Yao X, Yan J, Kim S, Nho K, Risacher SL, Inlow M, Moore JH, Saykin AJ, Shen L, for the Alzheimer's Disease Neuroimaging Initiative. (2015) Two-dimensional enrichment analysis for mining high-level imaging genetic associations. *BIH 2015: International Conference on Brain Informatics & Health, Lecture Notes in Artificial Intelligence*, 9250:115-124, London, UK, 30 August - 2 September, 2015.

2. License

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

3. Download

Software

- Available at <http://www.iu.edu/~hdbig/IGEA>

Documentation

- HTML: <http://www.iu.edu/~hdbig/IGEA/HDBIG-IGEA-v1.0.0.html>
- PDF: <http://www.iu.edu/~hdbig/IGEA/HDBIG-IGEA-v1.0.0.pdf>

4. Folder Structure and Demo Examples

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

- 01_software: The implementation of the two-dimensional imaging genetic enrichment analysis; 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”.