[](https://photos.app.goo.gl/BiLG4x3iEUxUMguc8)

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|  | Brain image analysis |
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|  | Brain image morphometry is almost universally restricted to computing volumes and thicknesses of brain regions. To better characterize the anatomy and shapes of brains, I oversaw the construction of a new brain [labeling protocol](https://mindboggle.info/data), the world's largest manually labeled set of brain images, and the open source [mindboggle](https://mindboggle.info/) software for automated brain feature extraction, labeling, and shape analysis. I also helped develop a new method called "concurrence topology" for analyzing high-order relationships in temporal data (such as functional brain imaging data) using persistence homology. While developing these methods, I needed to know which preprocessing approaches to choose, which led me to conduct the largest registration and brain extraction evaluation studies ever conducted. |
|  | **Mindboggle brain image analysis software**  Mindboggle ([mindboggle.info](http://mindboggle.info)) is open-source software for the analysis (feature extraction, labeling, and morphometry) of human brain imaging data. Features include anatomical regions (like gyri and subcortical regions), sulcal folds, and fundus curves. Shape measures include two types of depth, two types of curvature, volume, thickness, Zernike moments, Laplace-Beltrami spectra, etc. The project has been funded by three NIH grants, and is maintained by the Computational Neuroimaging Lab at the Child Mind Institute. |
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