Braviz: Visual Exploratory Analysis of Brain Datasets

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ABSTRACT

Brain researchers typically deal with large amounts of data from different sources and often, of different nature. This requires the use of several different software tools and makes it cumbersome and time consuming to answer simple questions. Because of this, data is not used to its fullest potential, and exploratory analysis is rarely done . This paper presents a software tool called BRAVIZ that integrates access to several data types and automates many of the cumbersome and error-prone tasks required to explore typical neuroscience data. This work focuses on integrating interactive visualization with real-time statistical analyses to facilitate exploration and discovery. BRAVIZ enables an inversion of the typical neuroscience analysis process by emphasizing images as the main organizing objects in the process rather than relying in abstract numerical indicators. This encourages researchers to notice trends and relationships, which motivate additional analyses and generally gain a fuller understanding of the phenomena represented by the data. A case study is presented that incorporates MRI, DTI, and fMRI images together with a large amount of neuropsychological and clinical data. The case study demonstrates how BRAVIZ enables researchers to discover new hypotheses about the relationships between structures and functions of the brain.

Keywords: Text Text Text Text Text Text Text Text

1 INTRODUCTION

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Table 1. Maximum size of the Manuscript

	Abstract max. legth (incl. spaces)	Figures or tables	Manuscript max. length
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Data Report	None	2	3000 words
Classification	1250 characters	10	2000 words
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Frontiers Commentary General Commentary Book review	None	1	1000 words
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2 MATERIAL & METHODS

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3 RESULTS

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4 DISCUSSION

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ACKNOWLEDGMENTS

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FIGURES

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