CALL FOR PAPERS

Special Issue
Journal of the Association for Information Systems (JAIS)

Methods, Tools, and Measurement in NeuroIS Research

SPECIAL ISSUE CO-EDITORS

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During the past decade, increasingly more scholars from the social and economic sciences, as well as from computer science, have started to use methods and tools from neuroscience. This development is expected to result in a better theoretical understanding of human behavior such as decision making. Moreover, using neuroscience methods and tools may contribute to the design and development of innovative information systems, as demonstrated, for example, by brain-computer interaction prototypes and affective computing applications.

Against the background of the increased use of neuroscience methods and tools in scientific fields which are closely related to the Information Systems (IS) discipline, the concept of NeuroIS has been introduced into the IS literature recently (Dimoka et al. 2007). In essence, NeuroIS is an emerging subfield within the IS discipline that makes use of neuroscience and neurophysiological methods, tools, and theories to better understand the design, development, and use of information and communication technologies (ICT) in organizations and society. Specifically, NeuroIS is expected to contribute to the development of new theories that make possible accurate predictions of ICT-related behaviors, and to the design of ICT artifacts that positively impact economic and non-economic variables such as productivity, satisfaction, adoption, and well-being (Riedl et al. 2010a).

Because the NeuroIS field is still in a nascent stage, even though empirical contributions to the IS literature have already been made (e.g., Dimoka 2010; Riedl et al. 2010b), it is important that IS scholars become familiar with the methods, tools, and measurements that are used in cognitive neuroscience and in other related disciplines (e.g., affective computing). Based on a higher degree of familiarity, IS academics can develop sound methodological knowledge that is necessary to evaluate whether or not a specific method, tool, or measurement is suitable to study a specific IS research question. Without such a knowledge base, it is hardly possible to leverage the full potential of neuroscience for IS research, because the production of scientific knowledge depends to a great extent on the techniques for collecting, analyzing, and interpreting data and the ways in which the techniques are applied (Simon 1980).

To date, a number of methods, tools, and measurements have been identified as useful for the investigation of IS research questions. Dimoka et al. (2012) and Riedl et al. (2010a), for example, provide comprehensive overviews that range from physiological methods (e.g.,

pupil dilation, heart rate, facial electromyography, skin conductance response) to tools that measure brain activity (e.g., functional magnetic resonance imaging (fMRI), near infrared spectroscopy); also, these papers describe techniques that are based on brain morphology (e.g., lesion studies, voxel-based morphometry, diffusion tensor imaging). Moreover, a recent experiment illustrates the potential of hormone measurements for IS research (Riedl et al. 2012); and finally, guidelines on how to conduct an fMRI study in social science research were published recently (Dimoka 2012). Accordingly, methodological contributions and discussions have already started to emerge in the NeuroIS literature contributing to an increased interest into this topic.

In the past, IS researchers have often relied on survey and interview data. While these techniques have significantly contributed to theoretical advancements, neuroscience methods, tools, and measurements are expected to be less biased, because self-reported data are susceptible to common method, social desirability, and subjectivity biases, among others (e.g., Dimoka et al. 2011). Moreover, emotions of computer users often do not reach the level of awareness, and therefore it is not possible to report on them in survey or interview studies. Consequently, neuroscience offers great potential to investigate emotions during human-machine interaction, thereby complementing traditional approaches.

Against the background of the potential that neuroscience methods, tools, and measurements offer for IS research, the goal of this special issue is to foster methodological contributions to the NeuroIS literature. Because the field is in a nascent stage, the scope of this special issue will be broad. We invite contributions ranging from philosophical considerations to more specific aspects of data collection and analysis. Moreover, we welcome contributions related to all relevant methods, tools, and measurements, as well as research that is located at the nexus of neuroscience and both behavioral research and design science research.

Special issue advisory and editorial board

- Henri Barki, HEC Montréal
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Topics

All topics related to methods, tools, and measurements in NeuroIS research are welcome. The following are a few sample topics:

- Guidelines on how to conduct a NeuroIS study based on different neuroscience and neurophysiological methods and tools
- Relationship between neuroscience data and IS constructs
- Construct validation of NeuroIS methods
- Correlation between neuroscience and self-reported data

- Triangulation studies based on multiple neuroscience data sets
- Advanced techniques for analyzing brain imaging data
- Development of new methods/tools relevant for NeuroIS research
- Philosophical and ethical discussions on NeuroIS methods
- NeuroIS methods for studying and enhancing the design of innovative artifacts
- Studies and methods to understand origins of creativity and its cognitive correlates
- Design of neuroscience tools and techniques to enhance innovation in IS

Please note that it is advantageous to use empirical IS investigations as running examples for all methodological contributions. For example, guidelines on how to conduct an electroencephalography (EEG) study should be based on an actual NeuroIS EEG study.

Submission guidelines

Submitted papers must make a significant and novel contribution to the literature. Moreover, we discourage methodological discussions which are not directly related to IS research. Interdisciplinary collaboration is strongly encouraged.

JAIS does not have restrictions on length because as an electronic journal it does not have page limits. However, all manuscripts should be written concisely to avoid unnecessary length. Manuscripts that are more than 15,000 words may receive extra scrutiny from the editors, although additional latitude can be expected for some types of papers such as review articles. Full papers are to be submitted to *JAIS* online review system: http://mc.manuscriptcentral.com/jais. Please follow the *JAIS* manuscript preparation guidelines: http://aisel.aisnet.org/jais/authorinfo.html.

Important dates

- Abstract submission: December 15, 2012 (or earlier)
  Note: Please send your abstract to: rene.riedl@jku.at, and a copy to fdavis@walton.uark.edu and ahevner@usf.edu
- Notification from abstract screening: January 31, 2013
- Initial submissions of full papers: April 30, 2013
- Workshop: June 1, 2013 (Gmunden, Austria)
  Note: Participation at the workshop is voluntary. However, participation will provide the opportunity to meet the editors and to personally discuss the papers. Please note that the *Gmunden Retreat on NeuroIS 2013* will take place from June 2-4 (www.NeuroIS.org).
- Reviews sent to authors: August 31, 2013
- Revised papers from authors due: November 30, 2013
- Decision notification: February 28, 2014
- Final papers due: May 31, 2014
- Publication (anticipated): July-August 2014

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