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A Framework to Analyze Project Management Cognitive Process Using MNE-Python

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Abstract : Significant research has been done in project management aiming to understand and improve processes, methodologies, and outcomes of managing projects across various industries and domains. However, project management research in the cognitive processes underlying decision-making, problem-solving, and information processing is limited. Thus, the problem that this research paper addresses is this limited research that could be due to several reasons such as interdisciplinary nature, practical constraints, lack of awareness of the opportunities, complexity, and lack of an analysis framework that can be used by researchers of project management. Therefore, the objective of this paper is to present a comprehensive and simple framework utilizing MNE-Python to investigate the cognitive processes involved in project management tasks. MNE-Python was selected because it is a powerful Python library for analyzing brain activity data from magnetoencephalography (MEG) and electroencephalography (EEG) experiments. The methodology used in this research was the qualitative method for building conceptual frameworks for phenomena that are linked to multidisciplinary bodies of knowledge. The resulting framework is organized in several key stages: import data fNIRS Raw Data, preprocess data and visualization, analysis and statistical testing, and interpret findings. The intellectual merit of this work is bridging the gap between neuroscience and project management research by providing a framework for studying the cognitive processes underlying project management tasks. The proposed framework holds promise for advancing our understanding of how project managers navigate complex environments, make strategic decisions, and optimize project outcomes. The broad impact of this work is that the insights gained from this research can inform the development of cognitive interventions and training programs to enhance project management performance and decision-making efficacy with the potential to enhance project success rates and optimize resource allocation.

Keywords : analysis, framework, MNE-Python, project management.
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