

# **Dialog-Based Protocol: An Empirical Research Method For Cognitive Activity during Software Engineering**

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## **Abstract**

Empirical Software engineering employs research methods grounded in empirical analysis to investigate and assess various aspects of software engineering including tools, technologies, processes, policies, or other human and organizational factors including cognitive activities of programmers. In order to study the cognitive activities, an empirical method is needed to document and analyze the process completely and precisely.

In this talk, Dr. Xu will first provide an overview of empirical research methods in software engineering. Subsequently, the dialog-based protocol, including the approach to conduct the experiment, the recording method and the coding schema for protocol analysis, is explained. The dialog-based protocol is based on the analysis of the dialog that occurs between programmers. The self-directed learning theory, which is used to conduct protocol analysis, draws upon the constructivist learning theory and the Bloom taxonomy. Lastly, a case study using the dialog-base protocol will be present, and the limitations of this novel protocol will be discussed.

## **Biography**

Dr. Simon Xu is a Full Professor in the School of Computer Science and Technology at Algoma University where he has been a faculty member since 2002. He has held the positions of School Director/Department Chair since 2009. Prior to his tenure at Algoma University, he was working in the School of Computer Science of University of Windsor, Canada. Additionally, he serves as a guest professor at Wuhan University and the adjunct professor at China University of Mining and Technology, China. Dr. Xu earned his Ph.D. degrees from Wayne State University, in the United States, and the University of Liege in Belgium. His research focuses on software evolution, program comprehension, big data, and cognitive process during software development. Dr. Xu has published more than 90 articles in referred journals and conference proceedings and a few authored/co-authored books. He has chaired seven IEEE international conferences and has been invited to deliver keynotes at various IEEE conferences. He is a senior member of IEEE and a member of ACM.