Abstract

Research into how humans interact with computers has a long and rich history. Only a small fraction of this research has considered how humans interact with computers when engineering software. A similarly small amount of research has considered how humans interact with humans when engineering software. For the last forty years, we have largely taken an artifact-centric approach to software engineering research. To meet the challenges of building future software systems, I argue that we need to balance the artifact-centric approach with a human-centric approach, in which the focus is on amplifying the human intelligence required to build great software systems. A human-centric approach involves performing empirical studies
to understand how software engineers work with software and with each other, developing new
methods for both ecomposing and composing models of software to ease the cognitive load
placed on engineers and on creating computationally intelligent tools aimed at focusing the
humans on the tasks only the humans can solve. Context: Several text books and papers
published between 2000 and 2002 have attempted to introduce experimental
design and statistical methods to software engineers undertaking empirical studies. Objective:
This paper investigates whether there has been an increase in the quality of human-centric
experimental and quasi-experimental journal papers over the time period 1993 to 2010.
Method: Seventy experimental and quasi experimental papers published in four general
software engineering journals in the years 1992-2002 and 2006-2010 were each assessed for
quality by three empirical software engineering researchers using two quality assessment
methods (a questionnaire-based method and a subjective overall assessment). Regression
analysis was used to assess the relationship between paper quality and the year of publication,
publication date group (before 2003 and after 2005), source journal, and average coauthor
experience, citation of statistical text books and papers, and paper length. The results were
validated both by removing papers for which the quality score appeared unreliable and using an
alternative quality measure. Results: Paper quality was significantly associated with year, citing
general statistical texts, and paper length (p

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Index Terms

Computer Science
Software Engineering

Keywords
Component; Formatting; Style; Styling; Insert (key Words)