

Data-driven Software Engineering

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Abstract

Software engineering (SE) is one of the most challenging of all engineering disciplines, it is often not recognized as such because software is so well concealed. Within the software development life cycle (SDLC), software engineers grapple with intricate tasks such as testing, quality assurance, and maintenance. Streamlining these activities through efficient automation not only enhances process quality but also yields substantial economic benefits. Traditional search-based software engineering (SBSE) techniques, however, fall short in addressing emerging challenges like cross-project suggestions, quality prediction, and artifact generation. Recent strides in Artificial Intelligence (AI), particularly machine learning techniques, coupled with the proliferation of software development data and metadata, have paved the way for data-driven solutions to tackle complex software engineering tasks. This talk delves into state-of-the-art methods and applications within the intelligent software engineering domain. Key areas of focus include software quality measurement, code recommendation, test data generation, and design synthesis. The advantage of shallow learning over deep learning in a family of code-related tasks is explained as a result of our recent research. Finally, existing challenges and opportunities are discussed, charting the course for future research endeavors in this dynamic field.

Biography

Morteza Zakeri received his M.Sc. and Ph.D. degree in Software Engineering as the first-ranked student from the Iran University of Science and Technology (IUST), in 2018 and 2023, respectively. Morteza's research interests span the domains of automated and intelligent software engineering, as well as machine learning and deep learning. His current focus lies in applying machine learning techniques to software engineering, mainly code-related tasks, such as software refactoring, program optimization, testing, and quality measurement.

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