

Expertise in Software Development: Towards an Interdisciplinary Theory

Software development includes diverse tasks such as implementing new features, analysing requirements, and fixing bugs. Being an expert in those tasks requires a certain set of skills, knowledge, and experience. Several studies investigated individual aspects of software development expertise, but what is missing is a comprehensive theory. In this talk, I will present a first conceptual theory of software development expertise that is grounded in data from a mixed-methods survey with 335 software developers and in related literature from psychology and software engineering focusing on expertise and expert performance. Our theory currently focuses on programming-related tasks and provides valuable insights for researchers, developers, and employers. The theory describes important properties of software development expertise and which factors foster or hinder its formation, including how developers' performance may decline over time. Moreover, our quantitative results show that developers' expertise self-assessments are context-dependent and that experience is not necessarily related to expertise.