Prolonging Software Life

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Abstract

In his seminal book, *The Unfinished Revolution*, Professor Michael Dertouzos eloquently argues that the promise of the digital revolution is yet to be fully realized. In particular, the ability to harness the power of the computer to significantly improve the quality of life for the vast majority of humankind remains unfinished.

Dertouzos proposes a new paradigm of computing where digital access points would be ubiquitous in the environment thus allowing “pervasive computing” to exist. His notions of what needed to be developed for such a vision are captured in his description of MIT’s Project Oxygen.

Central to this vision is the concept of personal adaptive software. In this case, each person would “carry” his/her own software everywhere. The software would be able to sense location, the presence of other “people”, and leverage this knowledge to perform its tasks. It would reconfigure itself and make the appropriate adaptations depending on what functions are required at that moment in time. It would be backwards and forwards compatible. Because it evolves, the software would never have to be replaced. Indeed, this software would have a very long life.

This radical view of software would require computer scientists to revisit core software engineering concepts such as compilation and interpretation. Indeed, it challenges the very notion of what it means to release a version of a software system.

In this talk, we explore these challenges and propose new research directions that move us closer to prolonging software life.