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Faculty Candidate Seminar

Preventing Erosion of Architectural Design Decisions through Their Strategic Implementation, Preservation, and Visualization

Mehdi Mirakhorli, DePaul University, Chicago

Wednesday, March 12th 11:00 to 12:00pm

Venue: CS216
(Refreshments will be served at 10:45 a.m.)

Abstract – Nowadays, a successful software production is increasingly dependent on how the final deployed system addresses customers' and users' quality concerns such as security, reliability, availability, interoperability, performance and many other types of such requirements. In order to satisfy such quality concerns, software architects are accountable for devising and comparing various alternate solutions, assessing the trade-offs, and finally adopting strategic design decisions which optimize the degree to which each of the quality concerns is satisfied.

Although designing and implementing a good architecture is necessary, it is not usually enough. Even a good architecture can deteriorate in subsequent releases and then fail to address those concerns for which it was initially designed.

In this talk Mehdi will present a novel approach that utilizes machine learning techniques to detect architectural design decisions in the code, monitor them during long-term maintenance activities, and help protect critical areas of the code from potential architecture degradation. Mehdi will also present the Archie tool suite, initially funded by the National Science Foundation, and further developed under the sponsorship of the Department of Homeland Security (DHS). Archie is designed to detect security-related architectural design decisions in the code and to protect them from potential degradation during maintenance activities.

Bio - Mehdi Mirakhorli is a doctoral candidate at DePaul University with a research background in software architecture design, requirements engineering, and application of data mining in software engineering. Previously, he worked as software architect on large data-intensive software systems in the banking, meteorological and health care domains. He has served on the Program Committees for several workshops and conferences and as Guest Editor for a special edition of IEEE Software on the Twin Peaks of Requirements and Architecture. Mehdi has received two ACM SIGSOFT Distinguished Paper Awards at the International Conference on Software Engineering and has engaged in research projects with the US Department of Homeland Security (DHS).