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Engineering Self-Adaptive Software Systems

Speaker: Prof. Sam Malek
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Abstract

The ever growing complexity of software systems and the society's reliance on their availability at all times has prompted the development of *self-adaptive software* systems. These systems are capable of autonomically evolving their behavior at runtime due to changes in the environment or user requirements. While the benefits of such systems are plenty, they present the software engineering researchers and practitioners with unprecedented challenges. I will start the talk by providing an overview of the challenges and state-of-the-art for enabling self-adaptation in software systems. Afterward, I will provide an overview of a framework that we have developed in my group aimed at alleviating some of these challenges. The framework, entitled *Feature-Oriented Self-Adaptation (FUSION)*, employs techniques borrowed from product line engineering and machine learning to enable construction of highly flexible and resilient self-adaptive software system. I will present a summary of our evaluation results and experiments, and conclude the talk with avenues of future research.

Biography

Sam Malek is an Assistant Professor in the Department of Computer Science at George Mason University. He is also a faculty member of the C4I Center at GMU. Malek's general research interests are in the field of software engineering, and to date his focus has spanned the areas of software architecture, autonomic computing, and quality of service analysis. The underlying theme of his research has been to devise techniques and tools that aid with the construction, analysis, and maintenance of large-scale distributed and embedded software systems. Malek received his Ph.D. from the Computer Science Department at the University of Southern California. He also received an M.S. degree in Computer Science from the University of Southern California, and a B.S. degree in Information and Computer Science from the University of California Irvine. He is a member of the ACM, ACM SIGSOFT, and IEEE.