Towards Action-Based Adaptive Security

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Abstract

Modern software systems often operate in highly dynamic and changing environments. Security requirements are also often subject to change due to the emergence of new threats or change of regulations. Adaptive security aims to enable software systems adjust their protection mechanisms in the presence of changes both in their operational environment and security requirements. Such highly dynamic and uncertain circumstances ask for the design of systems that are capable of detecting change, identifying consequences of the change and recommending corrective actions to mitigate the threats introduced by the change. The topology of an operational environment is one of the major dynamically changing aspects of the underlying system that predominantly impacts protection decisions. Topology can be defined as a representation of physical or digital elements and their structural relationship such as containment and connectivity relationships. This talk explores the challenges of engineering adaptive security and suggests an action-based approach for engineering self-adaptive systems that continue satisfying their security requirements in a steadily changing topology.

Bio

Sara Sartoli is a fourth-year Ph.D. student under supervision of Dr. Akbar Siami Namin in Texas Tech University. Her research interests are access control, requirements engineering and self adaptive systems. In particular, her research is focused on representing flexible security policies and using runtime models to enable evolving systems to continue satisfying their ecurity requirements. She is also interested in the design of human-centric security systems. Sara was born and raised in the south of Iran and she holds a B.S. in Computer Engineering from Shahid Chamran University of Ahvaz.