



"سخنرانی های علمی"

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An Overview on Automatic Resource Analysis via Software Analysis & Verification Methods

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Abstract

The expanding complexity of embedded systems has emerged the need for techniques to perform resource analysis. Worst-case resource analysis has become crucial for ensuring the safety of embedded systems performing critical tasks. In this presentation, the state-of-the-art methods used for full automatic worst-case resource analysis will be reviewed. These methods which have been used for software analysis or software verification are broadly grouped into modular and integrated methods. Modular approaches have been proven scalable, while integrated methods were not scalable till recently. Firstly, the most widely used methods in modular approaches will be reviewed; including "Abstract Interpretation (AI) + IPET" and the state-of-the-art modular method "AI+Path Analysis" for Worst-case Execution Time (WCET) analysis. Secondly, the state-of-the-art integrated method "Unroll_d" (developed during my PhD studies) will be presented and finally, a customization of "Unroll_d" for WCET Analysis and Memory High-watermark (MHW) Analysis will be explained. These analyses are performed in environments where the contribution of each basic block to the worst-case resource analysis is dynamic and/or symbolic.

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