Efficient dependence analysis methods in large-scale, complex architecture software systems

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**Topic Description:** Program dependence analysis has high importance in various software engineering fields, including program comprehension, software maintenance and debugging. There have been numerous approaches proposed in literature for static and dynamic program dependence analysis (program slicing), but most of these approaches suffer from two serious drawbacks. First, the algorithms try to be as precise as possible with the consequence of not being able to scale to large programs due to algorithmic complexity. Second, realistic software systems are large and have complex architectures, often employing various technologies in their components. The existing approaches are not sufficiently able to deal with the system level dependence analysis of such systems, but researchers at the Department of Software Engineering achieved promising results in the field.

The task in the research topic is to develop efficient methods (with the possible sacrifice of the precision), which are more suitable for the dependence analysis of large and complex software systems than the existing approaches.

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