Meyer / Woodcock

Verified Software: Theories, Tools, Experiments

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A Step Towards Verified Software Worries about the reliability of software are as old as software itself; techniques for allaying these worries predate even James King's 1969 thesis on "A program verifier. " What gives the whole topic a new urgency is the conjunction of three phenomena: the blitz-like spread of software-rich systems to control ever more facets of our world and our lives; our growing impatience with deficiencies; and the development—proceeding more slowly, alas, than the other two trends—of techniques to ensure and verify software quality. In 2002 Tony Hoare, one of the most distinguished contributors to these advances over the past four decades, came to the conclusion that piecemeal efforts are no longer sufficient and proposed a "Grand Challenge" intended to achieve, over 15 years, the production of a verifying compiler: a tool that while processing programs would also guarantee their adherence to specified properties of correctness, robustness, safety, security and other desirable properties. As Hoare sees it, this endeavor is not a mere research project, as might normally be carried out by one team or a small consortium of teams, but a momentous endeavor, comparable in its scope to the successful mission to send a man to the moon or to the sequencing of the human genome.

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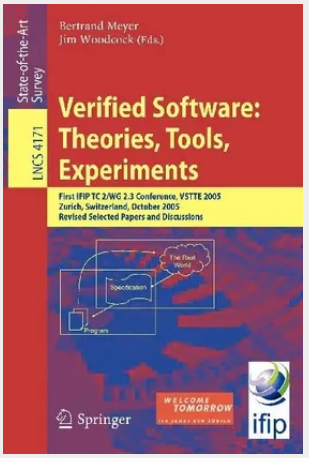

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