Automated Reasoning Creates More Reliable Computing Systems

Moshe Vardi

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CURRENT RESEARCH

Algorithmic verification techniques provide foundations for software and hardware reliability

Much of civilization now relies upon the foundations of software and hardware. Whether we are aware of software and hardware's impact, for many of us, it overwhelms most of our daily tasks, including our working hours with computers and cell phones but also the technologies that keeps our cars running and our planes flying. Dr. Moshe Vardi, of Rice University, helps develop techniques that can be used by industry to work towards creating more reliable systems. Using algorithmic verification techniques, Dr. Vardi enables computers to analyze computer programs and ensure that they meet their desired functionality, which makes his research highly important to society. Therefore, it is through the continual improvements of more reliable systems that Dr. Vardi and his team do the behind-the-scenes research that is necessary for life as we know it and for continued development towards more sophisticated technologies and applications.

Central to Dr. Vardi's work is a focus upon automated reasoning, which is the ability of computers to reason symbolically. The symbolic language is the language of logic, which has been studied by philosophers for 2,500 years. In the past fifty years, this language has found numerous applications in computer science. Dr. Vardi is capitalizing upon these applications to produce reliable systems that integrate the knowledge of designers and the needs of the consumer. This process allows for the interaction between designer and consumer to communicate in a more intuitive way and leads to product development that is both faster and cheaper, while being more in sync with the expectations of the consumer. Dr. Vardi's work with his students at Rice, as well as with collaborators all over the...

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AFFILIATION

Rice University

EDUCATION

- B.Sc., in Physics and Computer Science (Summa cum Laude), 1974 , Bar-Ilan University, Ramat Gan, Israel
- M.Sc., in Computer Science, 1980 , The Feinberg Graduate School, the Weizmann Institute of Science, Rehovoth, Israel
- Ph.D., in Computer Science, 1981 , Hebrew University, Jerusalem, Israel

AWARDS

- April 2013 Southeastern Universities Research Association's Distinguished Scientist Award
- May 2011 IEEE Computer Society's 2011 Harry H. Goode Memorial Award
- November 2008 Blaise Pascal Medal, European Academy of Sciences
- May 2006 ACM Paris Kanellakis Award for Theory and Practice
- February 2002 Member, U.S. National Academy of Engineering

RESEARCH AREAS

Technology, Computational Sciences / Mathematics, Informational Sciences / Internet, IOT, Devices, Data

FUNDING REQUEST

Your contributions will support the continued research of Dr. Moshe Vardi, of Rice University, as he develops further algorithmic verification techniques that are already being used by industry to develop more reliable systems. Donations will fund the necessary $300K required for personnel. In choosing to donate, you will play a role in in making the computing systems that underlie modern society more reliable.