

Whither Formal Methods: A Plea to Investigate New Applications

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Abstract: The first attempts to deploy what are now known as “formal methods” could be claimed to have started in the late 1940’s. These investigations were strongly inspired by applications. This thrust is also visible in most of the work through the 1980’s. Seminal abstractions were found and investigated using a variety of methods; in turn, the methods themselves were modified to cope with new applications.

More recently, it could be argued that a gap has developed between much of “formal methods” research and the current problems of computing engineers. In some cases, the abstractions of early practical problems appear to have become research growth areas in their own right. Meanwhile, computing applications have moved on: major systems are built which either provide or rely on important collections of facilities. More difficult issues can be found in languages like Java rather than Algol, new issues are raised with say distribution in CORBA. There are also a host of new languages being conceived for virtual reality, robot control, multi-media and many other areas. These are receiving too little attention from the formal methods community.

This is certainly not said to decry good theoretical work which mines apposite mathematical abstractions of key concepts. It is said to inspire computer scientists to look at new applications; to encourage leaders to ask their students to study new areas of computing to discern today’s challenges; and even to build –if necessary– relatively ugly models of these until we determine how to do better. This has to be a better recipe for applicability than ignoring inconvenient features of current systems in favor of producing ever more elegant models of yesterday’s applications.