Correctness in a Connected World

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The aim of formal verification is to mathematically prove that a computational system is correct. When computing was primarily concerned with complicated calculations, correctness meant that the program should produce a mathematically valid output for each input. However, computing systems now play much more versatile roles. With networks of servers talking to each other and interacting with a global user base, it is not even clear how to rigorously define correct and incorrect behaviors.

In this talk, we will survey the evolution of formal verification and highlight some of the challenges in the area.