

The Ada Lovelace Bicentenary Lectures on Computability, December 2015 – January 2016

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What is an Algorithm?

Tuesday, 22 December, 11:15-12:15

The title problem is of obvious interest to theorists. We will explain its importance to software engineering, in particular to specification, testing and verification of software and hardware. Wasn't the problem solved by Turing? No. Of course Turing's contribution was pivotal, but the problem remained open, even for sequential algorithms. We argue that problem cannot be solved in full generality because the notion of algorithm is still evolving. But certain species of algorithms have matured sufficiently to become amenable to foundational analysis. This applies first of all to sequential algorithm. In the main part of the lecture we formalize the notion of sequential algorithms in full generality. Then we will mention the other species of algorithms that have been formalized in full generality. Finally, we will describe some applications of this research, in particular at Microsoft.



[Watch the video](#)

