Abstract

Information Dynamics, Computation and Causality in Reprogramming Artificial and Biological Systems †

Hector Zenil 1,2

1 Department of Computer Science, University of Oxford, Oxford OX1 3BD, UK; hzenilc@gmail.com
2 Department of Medicina Solna, Karolinska Institute, Stockholm 171 76, Sweden
† Presented at the IS4SI 2017 Summit DIGITALISATION FOR A SUSTAINABLE SOCIETY, Gothenburg, Sweden, 12–16 June 2017.

Published: 9 June 2017

In this talk, I will explain how algorithmic information theory, which is the mathematical theory of randomness; and algorithmic probability, which is the theory of optimal induction, can be used in molecular biology to study and steer artificial and biological systems such as genetic networks to even reveal some key properties of the cell Waddington landscape, and how these aspects help in tackling the challenge of causal discovery in science. We will explore the basics of this calculus based on computability, information theory and complexity science applied to both synthetic and natural systems.

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