

Colloquium d'Informatique de Sorbonne Université

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Actual Causality: A Survey



18h00

Preceded by
drinks at 17h15



Amphi 25

Sorbonne Université - Faculté des Sciences
Campus Pierre et Marie Curie
4, place Jussieu, 75005 Paris



English

Abstract

What does it mean for event C to *actually cause* event E ? The problem of defining *actual causation* goes far beyond mere philosophical speculation. For example, in many legal arguments, it is precisely what needs to be established in order to determine responsibility. Philosophy has been grappling with causality since the days of Hume, in the 1700s, with many definitions being couched in counterfactuals terms: *C is a cause of E if, had C not happened, then E would not have happened*. In 2001, Judea Pearl and I introduced a new definition of *actual cause*, using Pearl's notion of structural equations to model counterfactuals. The definition has been revised twice since then, extended to deal with notions like *responsibility* and *blame*, and applied in databases and program verification. In this talk, I will survey the last 15 years of research on *actual causality*, including joint work with Judea Pearl, Hana Chockler, and Chris Hitchcock.

Bio

Joseph Halpern is the Joseph C. Ford Professor of the Computer Science Department at Cornell University since 1996. He received a B.Sc. (U. Toronto) in 1975 and a Ph.D. (Harvard) in 1981, both in mathematics. His major research interests are in reasoning about knowledge and uncertainty, security, distributed computation, causality, decision theory, and game theory. He has written 3 books: *Actual Causality*, *Reasoning about Uncertainty* and *Reasoning About Knowledge*. Among other awards, he received the Kampe de Fériet Award in 2016, the ACM SIGART Autonomous Agents Research Award in 2011, and the Dijkstra Prize in 2009. He started the computer science section of arxiv.org, and serves on its advisory board.



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