



Beating the odds: Learning or hallucinating? What is the science of data doing today?

Abstract

The science of data, from its beginnings in classical probability in the 17th century, to statistics and to machine learning today, has been a constant driver of human progress and a tool of enquiry for the human mind. It has constantly aimed at helping us get information, observing and estimating the world around us; that is, learning. The recent explosion of uses of Artificial Intelligence is obviously a major step to quench the thirst and the need for learning.

But what about the recent fear of “hallucinations” in so-called generative AI? Is that a natural part of this long path of discovery -- is this to be expected, or feared as a new and fatal twist?

This talk will be geared to a general audience with an interest in science, and will try to introduce this debate lightly, from the point of view of a mathematician.

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Biography

Professor Gérard Ben Arous is a Franco-American mathematician, specializing in stochastic analysis and its applications to mathematical physics, and to the mathematics of data science and artificial intelligence. He served as the Director of the Courant Institute of Mathematical Sciences and the Vice-Provost for Science and Engineering Development at New York University, where he is the Silver Professor of Mathematics. Prof Ben Arous studied Mathematics at École Normale Supérieure (ENS) and earned his PhD from the University of Paris VII. Prior to NYU, he has been a Professor at the University of Paris-Sud (Orsay), at the ENS, and more recently at the École polytechnique fédérale de Lausanne (EPFL), where he held the Chair of Stochastic Modeling. He has headed the Department of Mathematics at Orsay and the Departments of Mathematics and Computer Science at the ENS, and founded the Bernoulli Center in Lausanne.

Professor Ben Arous has been richly decorated in his illustrious career, including the Rollo Davidson Prize, the Montyon Prize of the French Academy of Sciences, the senior Lady Davis Fellowship from Israel, the Medallion Lecture of the Institute of Mathematical Statistics, invited speaker at the International Congress of Mathematicians and plenary speaker at the European Congress of Mathematicians. He has served on the editorial board of highly prestigious journals, including the Journal of the European Mathematical Society, Communications on Pure and Applied Mathematics and the co-editor-in-chief of Probability Theory and Related Fields. Prof Ben Arous is a Fellow of the Institute of Mathematical Statistics, an elected member of the International Statistics Institute, a member of the American Academy of Arts and Sciences and a member of the United States National Academy of Sciences.

