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P H I L M A T H S E M I N A R

Research seminar in the philosophy of mathematics and the philosophy of logic

Organizers: Fabrice Pataut (SND) and Francesca Poggiolesi (IHPST)

2nd SEMESTER 2023-2024 PROGRAM
IHPST – salle de conférences (2ème étage)
13, rue du Four, 75006 Paris

Monday February 26: 5pm-7pm

Denis Bonnay
(Philosophy, Université Paris Nanterre)

MATHEMATICS AND THE CREATIVITY OF NEURAL NETWORKS

Zoom link
https://pantheonsorbonne.zoom.us/j/98139570073?pwd=Wks5M2tNcXlmbDJnd01KS3l2NHVlQT09

Meeting ID: 981 3957 0073
Passcode: 318740

ABSTRACT

As opposed to purely predictive machine learning, generative AIs make it possible to « create » texts or images. How creative are those AIs, and which role does mathematics play in the process?

In this talk, I will focus on image generation machines, such as Midjourney, Dall.e or Stable Diffusion.Whether those AIs are really creative is a matter of controversy, some assuming that they would only mix and match what they have been trained on, some insisting that there is no reasonable sense in which the generated images already « exist » in the training data. It might seem difficult to answer the question without presupposing too much about either creativity or machines, but taking one step back and looking at the underlying maths and network structures actually helps.

More precisely, my aim in the talk is threefold:

1. Explaining the role mathematics play in the generation process

2. Showing that a proper understanding of this role makes it possible to adjudicate the creativity controversy

3. Suggesting that this role makes the case for a specific take on the toolbox view of the applicability of mathematics