

Abstract Submitted
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Diffusion, Backward In Time: A Universal Inversion Scheme

DERVIS VURAL, VU NGUYEN, University of Notre Dame — A sugar cube placed in a cup of tea will erode and eventually dissolve. Given the initial shape of the sugar block, it is trivial to predict its final distribution. However, the opposite problem of determining the initial state, given a final one is extremely difficult. A surprising number of seemingly unrelated topics in biology are the same one in disguise: Inverting diffusion on a network. Here we present a method that will identify the origin of a stochastic biological diffusion process, regardless of the forward model. We will then discuss potential implications to evolution, neuroscience, aging biology, and epidemiology.

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