

# Diffusion Models: A Return to its Thermodynamic Origins

*Monday 15 January 2024 17:15 (45 minutes)*

The 2015 paper that introduced diffusion models took inspiration from fluctuation theorems in non-equilibrium thermodynamics. I will demonstrate how some of these ideas can be refined through mathematical tools familiar to physicists (path integrals, calculus of variations etc.). This will allow us to study neural networks as a thermodynamic system, and offer a potential explanation for the impressive sample quality of these class of generative models.

**Presenter:** PREMKUMAR, Akhil