
Neural SDE: phase trajectories of SDE in the action

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Abstract

Neural Ordinary Differential Equation (Neural ODE) has been proposed as a continuous approximation to the ResNet architecture. Some commonly used regularization mechanisms in discrete neural networks (e.g. dropout, Gaussian noise) are missing in current Neural ODE networks. Later - this idea has been developed in the Neural SDE model. In this paper, we propose a way of modification of this model, mentioning the such theoretical side of SDE, like phase trajectories. Our framework can model various types of noise injection frequently used in discrete networks for regularization purpose, such as dropout and additive/multiplicative noise in each block.

Keywords SDE · Stratonovich integral · More

1 Introduction