复旦大學

数据科学与深度学习博士生与青年学者论坛

Analysis and Control of Diffusion Models: From Pretraining to Post-Training and Posterior Sampling



庞彤瑶

清华大学

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Abstract: This talk studies diffusion models across the pipeline from pretraining to post-training and posterior sampling. We first analyze how the forward diffusion schedule affects generation accuracy and sampling complexity, providing guidance for the design of stronger base models. Given a pretrained model, we then consider two ways to steer its generative distribution toward specific objectives: reinforcement-learning post-training for reward alignment and direct posterior sampling for inverse problems. Together, these topics illustrate how diffusion models can be designed, analyzed, and controlled from base-model construction to downstream applications.

个人简介:庞彤瑶，现为清华大学丘成桐数学科学中心助理教授。2014年本科毕业于北京大学，2019年获新加坡国立大学数学博士学位。主要研究方向为深度生成模型的理论、算法及其在图像处理与反问题中的应用，重点关注扩散模型的采样与误差分析、强化学习后训练以及后验采样。