



THE UNIVERSITY OF  
CHICAGO

DEPARTMENT OF STATISTICS

## Statistics Colloquium

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“Harnessing Computational Creativity with Controllable Generation”

THURSDAY, MARCH 02, 2023, at 2:00 PM  
Jones 303, 5747 S. Ellis Avenue

### ABSTRACT

Generative models have the potential to transform society, from reducing costs of digital content creation to democratizing access by lowering barriers to entry for creative work. However, the poor usability of even the most promising models poses difficulties in their safe deployment in real-world applications. In this talk, I will discuss my research on controllable generation to address this challenge. In contrast to existing approaches which try to steer models via interfaces such as natural language, I propose to directly extract intangible user preferences from a set of examples using classical density ratio estimation techniques. I will show how to estimate such likelihood ratios accurately, by drawing inspiration from diffusion models and bridging the gap between the two distributions via an infinite continuum of intermediate bridge densities. Applying these techniques leads to improvements in bias mitigation for AI safety, where a variant of this approach has been deployed in pre-training DALL·E 2. I will conclude with a discussion of my work on personalized music generation, as well as interesting avenues for future work in societal applications.