



COLLEGE of ENGINEERING
AND PHYSICAL SCIENCES

SCHOOL OF COMPUTER SCIENCE

MSc Defence

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Generative Network Guidance using Preference Learning

Chair: Dr. Stacey Scott

Advisor: Dr. Xiaodong Lin

Advisory: Dr. Andrew Hamilton-Wright

Non-Advisory: Dr. Lei Lei (SoE)

Abstract:

As the expressiveness of new forms of image generation increases rapidly, their potential uses and domain of applicability grows at the same speed. However, as their expressiveness increases, controlling and guiding the network's outputs becomes more challenging. Modern works leverage the use of linguistic features to guide generation, but we examine the applicability of a more indirect form of control through preference learning. Specifically, we explore the use of image comparison as a mechanism for inferred latent optimization in a relatively low-dimensional generative network latent space, aiming to recreate the mental image of an expert observer. In our experiments, we use the EMNIST handwritten digits and letters to recreate a user's mental image solely through preference feedback on sets of generated images from a generative model. Our goal is to examine the suitability of the preference learning process to forensic reconstruction techniques, such as face sketching.