



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

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Variational Generation of Images by Deep Spatial Architectures

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ABSTRACT

Given the recent successes of neural networks at generating images, we make an attempt to augment those models with high level information. More precisely, by introducing equivariance to a broad set of spatial transformation into the variational autoencoder [Kingma & Welling], we manage to better model natural images, leveraging the power of neural networks while staying in the statistical framework of variational inference. Such models allow us to sample credible candidates directly from the image distribution. Our models are based on dense neural networks and spatial transformer layers [Jaderberg et al.]. We will show that by forcing one part of the network to be invariant to the relevant pose in the image, and the other part to estimate this pose, we can generate high quality samples.

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