### 02456 DEEP Learning, DTU Compute, AUTUMN 2020

### SEMI-SUPERVISED LEARNING USING VARIATIONAL AUTOENCODERS

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#### Abstract

In this project we will explore digit classification on pictures from MNIST, using a semi-supervised Variational Auto-Encoder (VAE) neural network. The applied methods are based on the paper "Semi-supervised Learning with Deep Generative Models", by Kingma et al. This paper describes two semi-supervised VAE classifiers designated M1 and M2. This project will explore and compare the performance of both.

**Index Terms—** One, two, three, four, five

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[1] A.B. Smith, C.D. Jones, and E.F. Roberts, “Article Title,” *Journal*, Publisher, Location, pp. 1-10, Date.

[2] Jones, C.D., A.B. Smith, and E.F. Roberts, *Book Title*, Publisher, Location, Date.