DeepFashion

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Motiviation
There are two main motivations for doing a project in DeepFashion. Firstly, we want to work with generative adversarial networks (GAN) as these models relatively new. Our expectations from taking the course in deep learning is to become familiar with the latest technologies within this research field. It is thus important for us to work with the newest models and methods, and GAN seems to be one of them. Learning how to generate images, and data in general, is something we believe will become very useful, and something we believe is important in every data scientist's toolbox. Exactly, this intrigue our interests regarding this topic. Secondly, the reason being for choosing DeepFashion as our exam topic, is simple. All the members in our group enjoy working with image data. Especially, because the generated images can easily be visualized and be subjectively evaluated.

Background
Generative adversarial network is a new emerging field in the machine learning era. Although, GAN has existed in more than 4 years its applications are still being discovered (Goodfellow et al., 2014). A research conducted by Cui and et al. (2018), proposed a way to apply GANs on clothing images, and thereby create image synthesis with difference pieces of clothing on the same input image. Our project will heavily be inspired by the methodology presented in this research paper. However, to enhance the symmetry of the produced images, the paper will also apply a new methodology proposed in the paper "Enhancing Symmetry in GAN Generated Fashion Images" by Vishnu Makkapati and Arun Patro. The authors proposed a way to implement a "[…]new loss to check if the flipped version of the generated image is equivalently classified by the discriminator [.] Invert the flipped version of the generated image to reconstruct an image with minimal distortions." (Makkapati & Patro, 2017).

Milestones
Week 10: Download data and data preparation
Week 11: Begin initial neural network construction
Week 12: Test and evaluate different network structures
Week 13: Parameter optimization
Week 14: Visualize results (ready to be inserted in report)
Week 15: Write report
Week 16: Write report (finalize)

References
Cui, Y. R., Liu, Q., Gao, C. Y., & Su, Z. (2018). FashionGAN: Display your fashion design using Conditional Generative Adversarial Nets. Computer Graphics Forum, 37(7), 109–119.

Goodfellow, I., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., … Bengio, Y. (2014). Generative Adversarial Nets. Retrieved from https://papers.nips.cc/paper/5423-generative-adversarial-nets.pdf

Makkapati, V., & Patro, A. (2017). Enhancing Symmetry in GAN Generated Fashion Images. Artificial Intelligence XXXIV, 405–410.