Weekly Work Summary

Group 2 - Conditional GAN

Week 1,2 -07.05.2019:
- Read the CycleGAN paper
- Looked into the official implementation and tested it
- Developed ideas how to realize the conditioning of the GAN:
  - Adding a new one-hot-encoded channel to the input image
  - Adding the one-hot-encoded information into the model (e.g. between Encoder and Decoder)

Week 3 -14.05.2019:
- Changing the existing code to implement the binary "add conditional channel" approach:
  - Added function to add conditional channels. Binary case is also one hot encoded (adding two extra layers) to make future scaling easier.
  - Add argument to parser to manually define number of added channels and index of channel to be filled with 1s.
  - Change CycleGAN architecture, so G_A and G_B are becoming the same generator, e.g. changing G_B to G_A. (G_A=G and G_B=F in paper)
  - Change the Generator to take an arbitrary number of channels as input, before it could only take RGB or greyscale images.
- Problem: Conditioning doesn't work.
  - "Input A conditioned to B" still outputs fake B and "Input B conditioned to A" still outputs fake A
  - "Input A conditioned to A" outputs fake B instead of A (also for B-case)
  - In other words, the network just creates fake images from the other domain. It never creates fake images of the same domain.
  - Hypothesis: The network learns to ignore the conditional channels due to no training images "Input A conditioned to A". It learns that the conditional channels doesn't bring any information