# Recommender System

Recommending shoes/dresses using style transfer

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# Ganilla
## Team 1 (Noah Chavannes & Yves Rutishauser)

# Journal
## Day 1

- Read CycleGAN and Ganilla Paper

  - Tried to understand concept and familiarize with the topic in general (GANs)

- Training on GPU:

  - Tried to setup google cloud and connecting to IDE (connect via ssh to pycharm interpreter)

  - Got the project running but GPU was not more powerful than the one in the local setup

    - Tesla K80 (12GB, 4.1 TFLOPS in fp32) vs. GTX 1070 (8GB, 6.5 TFLOPS in fp32)

  - Decided to switch to local setup, overhead with remote setup

- Problems:

  - Pytorch vs Tensorflow

  - Format of dataset provided (no dropbox download possible)

  - Decision on where to run code

  - Upload of 200k files

# Journal
## Day 2&3

– Cloning Ganilla repository

– Setting up local environment

– Understanding code and running code locally

  – Using map example (from Ganilla paper)

  – Using shoe/dress test dataset (1000 data points)

– Extracting code to own project and adapt it for our purpose

– Problems:

  – Understanding Pytorch code

  – Understand code and extracting useful information (they combined multiple models)

# Journal
## Day 4

– Analyzing results

– Create presentation

– Problems:

  – The Ganilla model transfers the structure of the dress to the shoe (and vice versa) → we want to remove the skip-connections

– We tried to run the Ablation Model-II but ran into GPU memory errors locally and on google cloud

  – We tried to clear the GPU memory in Pytorch using "torch.cuda.empy_cache()" after each iteration

  – We reduced the number of trainable parameters by lowering the feature size and the amount of filters and setting batch size to 1
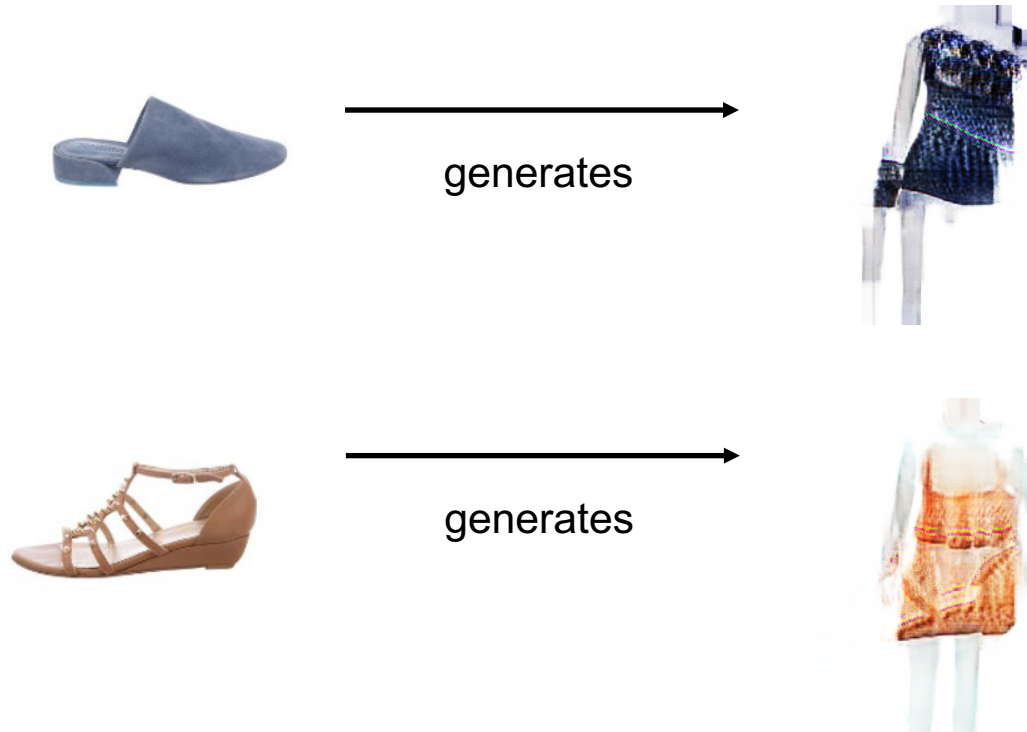
# Example (Dress → Shoe)



generates

generates

Sidenote:
- The generated structure of the shoe is not good enough
- The model is able to transfer the color of the dress and some of its style

# Example (Shoe → Dress)



generates



generates

Sidenote:
– The generated structure of the dress is not good enough
– The model is able to transfer the color of the shoe and some of its style

# Observations

– Ganilla expects the structure of the image to stay the same

– The domains of dresses and shoes have different structures. Therefore, when mapping a dress to a shoe, the structure cannot be maintained and has to be inferred

  – Ganilla incorporates low-level information gained during downsampling through skip-connections into the upsampling process (blue line) (P.5)



GANILLA

  – This helps to preserve the structure. To improve the model in our use-case, one could try to remove the skip-connections → Ablation Model-II

    – Due to restrictions in the infrastructure, we could not train the Ablation Model-II



Ablation Model-II