Deep Unsupervised Learning

Project Descriptions

Phase 1: Unsupervised Anomaly detection

- Dataset: Fashion MNIST
  - 10 class. 6k and 1k training and test images per class resp.
- Evaluation: One-class out
  - Each time treat 1 class as normal and the rest as anomaly.
  - Repeat that for every class and report the average.

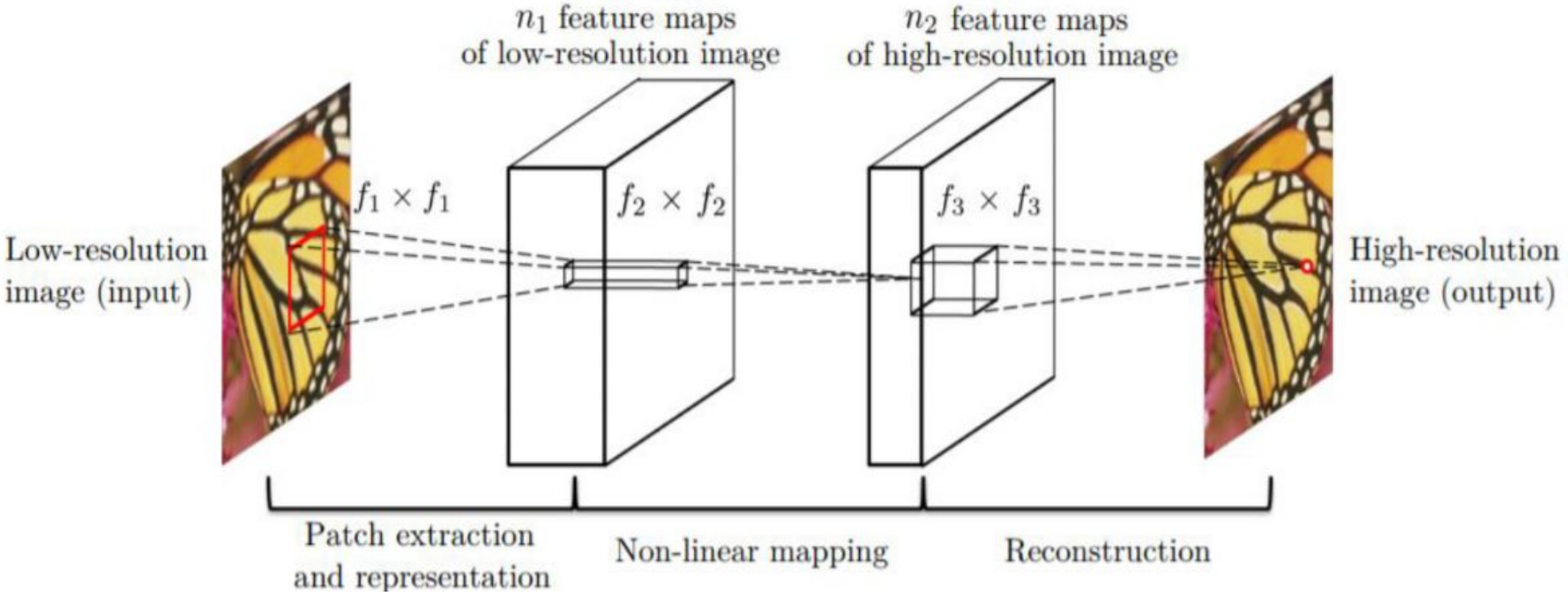
Method	Deadline	Project percentage
Convolution Vanilla AE + Denoising AE	Friday 21 March	5%
Convolution VAE	Friday 4 April	5%

Phase 2: Image Super-Resolution

- Dataset: TinyImageNet <https://www.kaggle.com/c/tiny-imagenet>
  - 200 class. 500 image per class.
  - 64 x 64
- Metrics: PSNR, SSIM
- Input 32 x 32 image, output 64 x 64 image

Method	Deadline	Project percentage
AE + GAN	April 14 March	5%

Phase 2: Image Super-Resolution



Phase 3: Final Project Presentation

- 15 (10 + 5) minutes presentation to present your findings (for both anomaly detection and conditional image generation project) + QA

Deadline	Project percentage
April 14 March	15%

Details

- Project for 30% of the total grade
- Group of 2 students
- Free Gpus: Google Colab / Kaggle
- Things that should be part of your presentation:
  - Overview of results (both qualitative and quantitative)
  - Evaluation metric
  - Challenges (including things you tried but did not work out)
  - What have you learned from the exercise