

Project Title: Latent representations learned by autoencoders are well transferred to pattern recognition tasks, aren't they?

1 Notes

Introduction is good. Problem statement: self-supervised learning helps us to overcome described issue with supervised learning. Related work is clear. Methods of self supervised learning are clearly described. Don't quite understand why they'd need to describe MAE, but ok. Contribution is clear

1. Summary and contributions. Briefly summarize the project.

This project tests self-supervised learning methods via training simple 2-layer MLP classifier based on learned representations. Compared methods are AE, VAE, SimCLR, datasets are MNIST and CIFAR10. As a conclusion they show that SimCLR representations perform much better w.r.t. stated experiment setup on CIFAR10 than AE and VAE ones.

2. Strengths. Describe all the strengths of the project in enough depth.

Authors give clear introduction, explain the problem of self-supervised learning and benefits of solving it. Methods they compare are diverse, experiment is simple and clear while fairly representative. Results are clear. Visualization is informative. References are full.

3. Weaknesses. Explain all the limitations of this project in enough depth.

The experiment setup is very simple, feels like authors should have expanded work a bit. Experiments performed only on two rather simple datasets. Maybe authors should have included description of SimCLR algorithm in Introduction part.

4. Correctness. Are the claims and method correct? Is the empirical methodology correct?

Experiments have been done on two simple datasets so this doesn't give us that much of overall perspective on AE, VAE, SimCLR representation learning ability. It is also unclear wherever dimensionality of latent space for all the methods was equal or not.

5. Clarity. Is the project report well written?

Report is well written, well structured, all the essential parts are stated clearly

6. Related work. Is it clearly discussed?

Maybe authors should have described more precisely methods they are comparing (AE, VAE, SimCLR) and written about some previously done work comparing self-supervised methods performance. Other than that more general self-supervised learning framework was described full enough.

7. Reproducibility. Are there enough details to reproduce the major results of this work?

Provided way to run experiments is correct (except one minor flaw related to python version). Through training of self-supervised models is computationally consuming and authors hasn't provided any checkpoints or even way to load them. I've tried to reproduce experiments with VAE and I succeeded, so seems like experiments are reproducible.

8. Overall score. You should NOT assume that you were assigned a representative sample of projects. The "Overall Score" for each project should reflect your assessment of the project.

(3) A good submission (B).

9. Confidence score.

(3) You are **fairly confident** in your assessment. It is possible that you did not understand some parts of the submission or that you are unfamiliar with topic.

Note: I'm not that much proficient in self-supervised learning so I may be not the best person to review this work