

Seminar Paper Title

Your Name

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Chapter 1

Introduction

1.1 Motivation and Problem Setting

Why clustering? Why deep clustering? Limits of existing methods.

1.2 High-level Overview of DEC, VaDE, and ClusterGAN

Briefly describe each method and their key ideas.

1.3 Goal and Contributions of Report

1.4 Report Structure

Chapter 2

Related Work

2.1 Traditional Clustering Methods

2.2 Deep representation Learning fir clustering

Autoencoders, VAEs, GANs for representation learning.

2.3 Evaluation Metrics for Clustering

ACC, NMI, ARI, FID (for ClusterGAN).

2.4 AE

2.5 VAE

2.6 GAN

Chapter 3

Method

3.1 DEC

3.2 VaDE

3.3 clusterGAN

Chapter 4

Comparative Analysis

- 4.1 Modeling assumptions and latent Structure
- 4.2 Comparison of learning objectives
- 4.3 Complexity, Stability, and Hyperparameters
- 4.4 Empirical Results and Discussion
- 4.5 Common assumptions and Limitations

Chapter 5

Conclusion

5.1 Summary of methods

5.2 Conclusion

Bibliography

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