

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).

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