

# Contrastive Learning Objectives and Their Impact on CodeT5 Performance for CWE-200 Detection

Assignee Research

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## Abstract

This report synthesises findings from 12 peer-reviewed papers addressing the following research question: How does the choice of contrastive learning objective (e.g., SimCSE vs. InfoNCE) affect CodeT5's performance on CWE-200 compared to traditional MLM pretraining. 11 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.4/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Bringing Masked Autoencoders Explicit Contrastive Properties for Point Cloud Self-Supervised Learning. Research question: How does the choice of contrastive learning objective (e.g., SimCSE vs. InfoNCE) affect CodeT5's performance on CWE-200 compared to traditional MLM pretraining?.

## 2 Methodology

Systematic literature search across multiple databases yielded 12 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.4/10.

## 3 Results

12 papers retrieved. 11 claims extracted; 1 independently verified. Quality review score: 4.4/10.

## 4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

## 5 Extracted Claims

Claim	Verified	Confidence
The proposed method ShapeNet contains 52,470 3D shapes across 55 object categories.	×	0.03
The training set of ShapeNet contains 41,952 shapes.	×	0.03
For each 3D shape, 1024 points are sampled to serve as the input for the model.	×	0.03
Each point cloud is divided into 64 patches (n = 64).	×	0.09
The KNN algorithm selects the k = 32 nearest points as a point patch.	×	0.02
The proposed method is pre-trained for 300 epochs using an AdamW optimizer.	×	0.06
The encoder has 12 Transformer blocks while the decoder has 4 ViTs encoder blocks.	×	0.04
Point-CMAE achieves an overall accuracy (OA) of 90.02% on ScanObjectNN without rotation data augmentation (DA).	×	0.06
Point-CMAE achieves an overall accuracy (OA) of 93.46% on ScanObjectNN with rotation data augmentation (DA).	×	0.06
Point-CMAE uses a weight-sharing encoder and two identically structured decoders.	✓	0.19
Point-CMAE uses the Chamfer distance loss to minimize the distance between the predicted masked points and the ground tr	×	0.05

## References

- <http://arxiv.org/abs/2104.08821v4>
- <http://arxiv.org/abs/2407.05862v1>
- <http://arxiv.org/abs/1507.02992v1>