



THE UNIVERSITY OF
CHICAGO

DEPARTMENT OF STATISTICS

MASTER'S THESIS PRESENTATION

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Understanding the Representation Learned by Contrastive Learning

TUESDAY, April 25, 2023, at 3:00 PM
Zoom Meeting

ABSTRACT

The goal of our study is to investigate the learned representation of the contrastive learning method proposed in 'A Simple Framework for Contrastive Learning of Visual Representations'. Specifically, we explore the scenario where the dataset includes two competing features: MNIST digits and CIFAR objects. Our findings indicate that there is a trade-off between digit recognition accuracy and object identification accuracy. We also utilized principal component analysis (PCA) to separate the mixed features and observed that certain principal components contain more information about one feature over the other. We discovered that using only 10 principal components that correspond to the relevant feature would yield an accuracy that is equivalent to 94% of the accuracy achieved by using all 2048 principal components, which demonstrates a potential to disentangle the mixed features for downstream tasks.