Batch Curation for Unsupervised Contrastive Representation Learning

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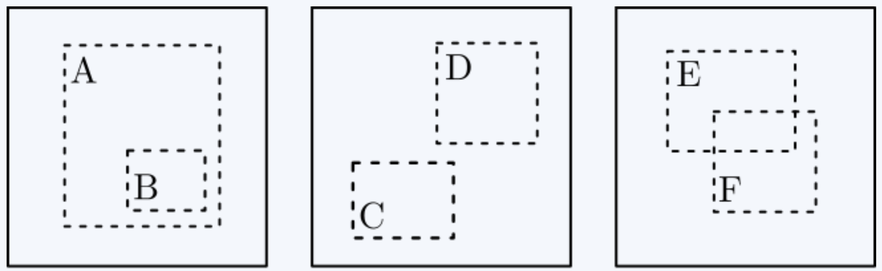
1. Contrastive learning with patches

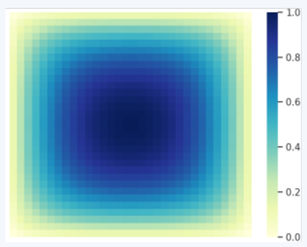


a) Global-local view ($B \subseteq A$) b) Adjacent views ($C \cap D = \varnothing$) c) Intersection view ($E \cap F \neq \varnothing$)

Patch configuration performance

SimCLR model version	Linear acc.	K-NN acc.	avg. p. size
Different patch configurations			
default	**90.67%**	**86.29%**	**49%**
global-local	87.32%	81.95%	51%
adjacent view	64.59%	65.96%	17%
intersection view	**90.72%**	**86.63%**	**49%**
equal configuration	88.60%	83.95%	39%

Random-Resize-Cropping (default)

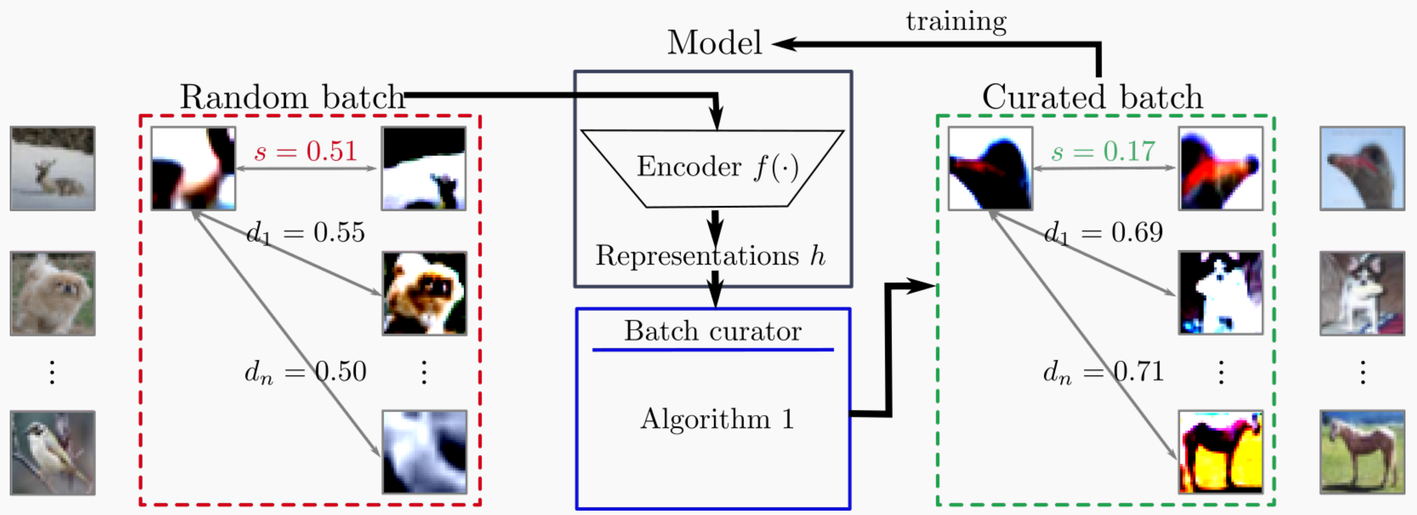


Patch config.	Occurrences
a) Global-local	17.27%
b) Adjacent view	1.40%
c) Intersection view	81.33%

2. Batch curation

Motivation: configuration of patches affects the quality of representations

Approach: self-curated patch selection: similar patches should be closer in the representation space than dissimilar ones



Results on SimCLR trained on CIFAR-10:

SimCLR model version	Linear acc.	K-NN acc.	avg. p. size
default w/o batch curator	90.67%	86.29%	49%
with batch curator	**90.81%**	**87.63%**	49%

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