



THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Vision and Robotics Seminar

on Thursday, Dec 31, 2020  
at 12:15

<https://weizmann.zoom.us/j/93320818883?pwd=VE1STDVrS3BPMThHenlqZXhxbDg3dz09>

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Demystifying Unsupervised Image Translation through the Lens of Attribute  
Disentanglement

Abstract:

Recent approaches for unsupervised image translation are strongly reliant on generative adversarial training and ad-hoc architectural locality constraints. Despite their appealing results, it can be easily observed that the learned class and content representations are entangled which often hurts the translation performance. We analyse this task under the framework of image disentanglement into meaningful attributes. We first analyse the simpler setting, where the domain of the image and its other attributes are independent. By information arguments, we present a non-adversarial approach (LORD) that carefully designed an information bottleneck for class-content disentanglement. Our approach brings attention to several interesting and poorly explored phenomena, particularly the beneficial inductive biases of latent optimization and conditional generators, and it outperforms the top adversarial and non-adversarial class-content disentanglement methods (e.g, DrNet and MLVAE). By further information constraints, we extend our approach to the standard unsupervised image translation task where the unknown image properties are dependent on the domain. Our full approach surpasses the top unsupervised image translation methods (e.g. FUNIT and StartGAN-v2).

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