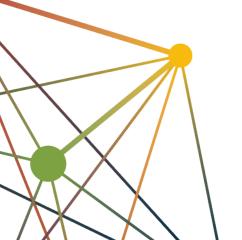psd

Unsupervised Layerwise Learning of CNN

WHEN
May, 12th, 2021
8:00 AM, CDT

WHERE
Via ZOOM
ZOOM information will be provided in the email announcement for this seminar.

Jiaai Pan, MS Candidate

Convolutional neural networks (CNN) have achieved impressive performance in image classification and reconstruction. Shallow neural networks are easier to interpret and optimize, while deeper networks have greater representational power. Here we use unsupervised 1-layer training problems to build deeper neural networks layer by layer sequentially and compare the layerwise training networks with end-to-end training networks with the same structures. We study CNN-based classifiers and auto-encoders on MNIST, Fashion MNIST and CIFAR-10. For the classification task on MNIST and Fashion MNIST, we show that the layerwise training networks are competitive alternatives for their end-to-end training counterparts. Finally, we also evaluate how the parameters of the unsupervised 1-layer training problems can affect the performance of the networks.

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