Convolutional Neural Networks

Why do we need convolutions?

CNN specifics

CNN flavors

Resources

Why do we need convolutions?
Hyperparameters

- **# of filters**
  - 32, 64, 128 ...

- **Filter size**
  - 11x11, 5x5, 3x3 ...

- **Padding**
  - Pad the input image?

- **Stride**
  - # of pixels to shift the filter
Number of Parameters

Number of Parameters

Number of Parameters

Number of Parameters
Number of Parameters

Memory Management
Capsule Networks

“Thresholded capsule/CFM1: this paper presents another feasibility. This paper uses data sets for capsules/CFM1.”

Capsule Networks

“The pooling operation used in convolutional neural networks is a big mistake and the fact that it works so well is a disaster.” — Geoffrey Hinton

Capsule Networks

Figure 1: A simple CapsNet with Trojans. This model gives comparable results to deep convolutional networks such as VGG [14] and ResNet [2] [19]. The length of the activity vector of each capsule integrates over all occurrence orders. The output capsules have a classification loss. Wj is a weight matrix between each xi, i \( (i \in \{1, 2 \times 4 \}) \) in PrimaryCapsule and Wj, j \( \{1, 16\} \).

Dynamic Routing Between Capsules

Conference on Neural Information Processing Systems - 2017
Deep Learning

Reproducibility

Existing Solutions