Batik Classification using ConvNet and Transfer Learning

Research progress report

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November 9, 2016

IKO61181 Advance Image Processing

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Overview

Research Proposal

- Batik image classification using ConvNet LeCun et al. [2015]

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- Accuracy comparison with:
  1. Convolutional stacked autoencoder (Menzata [2014])
  2. Direct SIFT descriptor matching (Willy et al. [2013])

Methodology

ConvNet by LeCun et al. [2015]

Figure 1: Classification with convolutional neural network

ConvNet by LeCun et al. [2015]

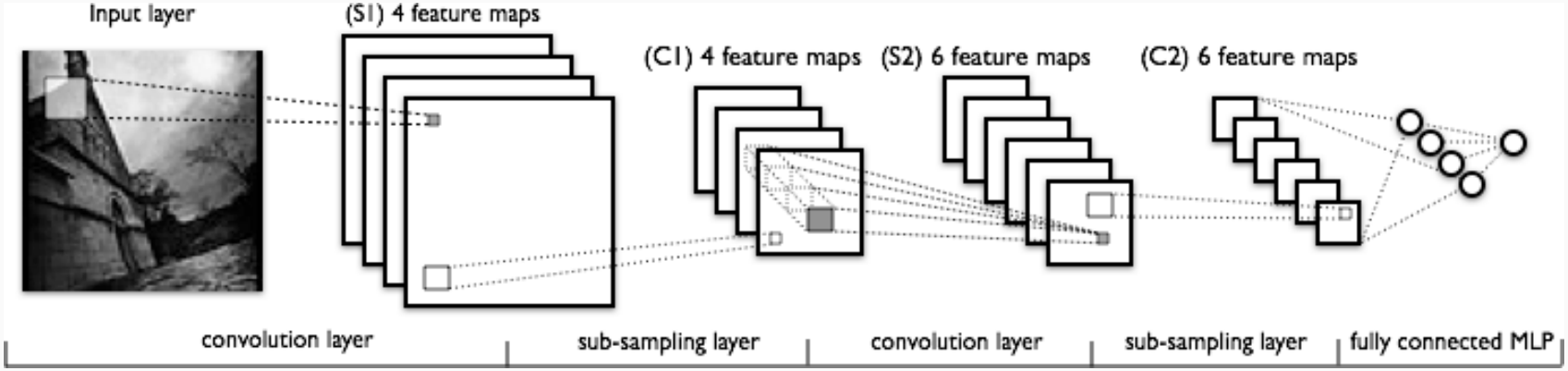

Figure 2: Convolutional neural network (source: `deeplearning.net`)

VGG16 by Simonyan and Zisserman [2014]

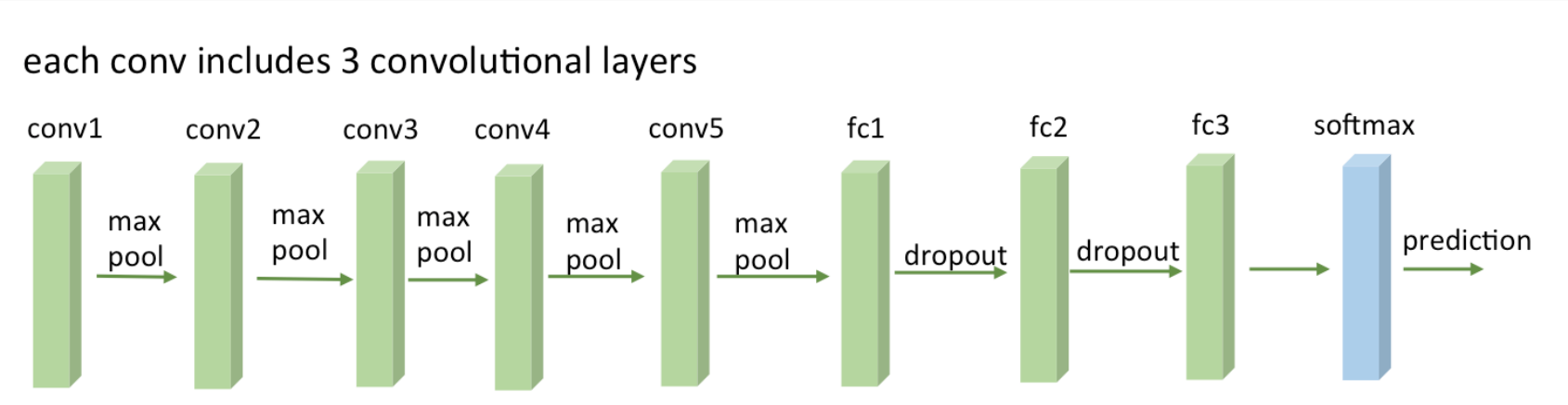

Figure 3: VGG-16 convnet (source: `sebastianraschka.com`)

Training Methods

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2. Transfer learning
    - Initialize convnet weights with the weights of pretrained model (eg. VGG16 VGG19, ResNet50, Inception v3)

Current Progress

Transfer learning with VGG16

- Preprocessing

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  - Resize, vectorization & normalization 603 images

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  - Bad accuracy of 57%
- Using Python (OpenCV, Keras + Theano) `https://github.com/yohanesgultom/deep-learning-batik-classification`

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- Do regular training (zero/random weights initialization)
- Run direct SIFT-descriptor matching on same data for comparison

References

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Thank you