Proposal for Deep Learning in Computer Vision Practical Course

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1 Motivation

Deep learning is a quickly evolving field that has already beaten many previous state-of-the-art results in machine learning tasks such as image classification, object detection, speech recognition, document classification and more. To understand deep learning it is not only necessary to learn the theoretical foundations and ideas but also to get hands on experience with novel architectures, software frameworks and datasets. Therefore, the *Deep Learning in Computer Vision* practical course offers a perfect opportunity to gain firsthand experience and apply what we have learned so far.

2 Prior Experience

The following quickly summarizes our prior experience in the field of deep learning:

Dominik Straub

Fabian XYZ

Steven Lang

- Deep Learning on Visual Data course (JGU Mainz), including practical project *Deep Feature Interpolation* [1]
- Integration of Deeplearning4j into the Weka software [2]

3 Favored Topics and Motivation

Priority 1: Sample Free Bayesian SegNets Bayesian approaches in deep learning are currently under investigated and are not included in classical deep learning introduction literature, which makes it a good topic to dive into.

Priority 2: Using Atrous convolutions for monocular depth estimation TODO: Add Motivation

References

[1] `https://github.com/steven-lang/dfi-tensorflow`
[2] `https://github.com/Waikato/wekaDeeplearning4j`