KTH Information and
Communication Technology

Data-Efficient Deep Learning for Independent Binary Outputs

Exploration of importance-weighted active learning, ensembling, joint training and class imbalance correction to reduce label complexity and training time in affiliate e-commerce product clasification

MATTIAS ARRO

Master's Thesis at KTH Information and Communication Technology
MSc Data Science (EIT Digital track)

Academic Examiner: Magnus Boman
Academic Supervisor: Jim Dowling
Industrial Supervisor: Abubakrelsedik Karali

2018

Abstract

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Keywords: Deep learning, machine learning, neural networks, active learning

Referat

Denna fil ger ett avhandlingsskelett. Mer information om LaTeX-mallen finns i dokumentationen till paketet.

Acknowledgment

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Contents

Abbreviations

LSTM	Long Short Term Memory
NN	Neural Network
RNN	Recurrent Neural Network

Introduction

machine learning (ML) has become successful enough over the past few years to be a recurring topic in mainstream media and its use almost a requirement for startup funding[1]. a lot of this newfound interest, hype, and hysteria is directed at neural networks and deep learning. this focus is not unfounded - deep learning approaches continue to break benchmarks in core machine learning research areas such as computer vision [cite], speech recognition [cite], and some kinds of natural language processing such as machine translation [cite]. reinforcement learning has also been revolutionised by deep learning, which is used in various robotics and control tasks, achieving superhuman performance in complex games and driving vehicles in real-world situations. there are even limited results in beating human at highly uncertain games with various actors such as Texas holdem poker [cite].

while bearing superficial resemblance to natural brains, neural networks are simply layers layers of non-linear transformations capable of learning complex mappings from multidimensional inputs to (usually multidimensional) outputs. the building blocks of neural networks are relatively simple and the algorithms training these networks are universal and well studied, which makes deep learning well suited for a wide variety of problem domains. at the same time, being able to stack more and more layers allows the same kind of model approximate more complex functions.

[1] being driven by "crypyo" or blockchain is also acceptable

Background

Problem

Research Questions

Purpose and Goal

Methodology

Evaluation

Work Environment

Deployment Environment

Ethics and Sustainability

Delimitations

Outline

Discussion

Conclusion

References

Declaration

I hereby certify that I have written this thesis independently and have only used the specified sources and resources indicated in the bibliography.

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RDF

And here is a figure

Figure 1. Several statements describing the same resource.

that we refer to here: 1