PROJECT REPORT

Pattern Classification Using Convolutional Neural Networks

by

Hichem Belhocine, Dominik Söllinger, Yansel Gonzalez Tejeda

{hichem.belhocine, dominik.soellinger, yansel.gonzalez-tejeda}@stud.sbg.ac.at

supervised by

Ao. Univ.-Prof. Dipl.-Ing. Dr. Helmut A. Mayer

Project completed as part of the course

Pattern Recognition II, Winter Term 2017/2018

Department of Computer Science

Paris-Lodron Universität Salzburg

November 24, 2017

Abstract

In this project we address the problem of classifying patterns in the context of artificial intelligence. Pattern classification is at the heart of many modern computational intelligent systems and despite much effort done, it remains being a challenging task. Therefore we propose to use Convolutional Neural Networks (CNN) to investigate the performance of Deep-Learning techniques on this area. In order to accomplish our objective we train and test our classifiers on three datasets: Semeion Handwritten Digits, Ionosfere and Wall-Following Robot Navigation. Our results show that blalblbll

Keywords: pattern classification, convolutional neural networks.

Contents

1 Introduction

Just an example of how we can use one file with all the bibliography references, e.g. [Dibra et al., 2016] and these references navigate back to the page.

2 Convolutional Neural Networks

3 Datasets

3.1 Semeion Handwritten Digits

3.2 Ionosphere

3.3 Wall-Following Robot Navigation

4 Implementation

5 Experiment and Results

6 Conclusion

Annex I. Project plan

Date	Work step	Assigned to	Status
03.10.2017	Defition of Project scope, topic, goals and members.	HB, DS, YG	Completed
16.02.2018	Submission of Project report to Prof. Mayer.	DS	TBD

References

[Dibra et al., 2016] Dibra, E., Jain, H., Öztireli, C., Ziegler, R., and Gross, M. (2016). Hs-nets: Estimating human body shape from silhouettes with convolutional neural networks. In *2016 Fourth International Conference on 3D Vision (3DV)*, pages 108–117. IEEE. 4