

Documentation for Algorithms for Massive Datasets project: Turkish lira recognizer

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Contents

| | | |
|----------|---|----------|
| 1 | Introduction | 1 |
| 2 | The Turkish Lira banknotes dataset | 2 |
| 2.1 | Preprocessing techniques applied to the dataset | 3 |
| 2.2 | Considered algorithms and their implementation | 4 |
| 3 | Scalability of the proposed solution | 5 |
| 4 | Experiments and results | 6 |
| 5 | Conclusions | 7 |
| | References | 8 |

1 Introduction

The Objective of this project is to build a Turkish Lira banknotes image recognizer through a Convolutional Neural Network. The proposed solution, based on Tensorflow libraries, contains steps to dynamically download the dataset, preprocess the images in it and use the processed images to train a Convolutional Neural Network in recognizing and classifying them. Since the given dataset contains many images and since the request is to classify some precise details of them, it's expected to achieve good results from the proposed solution and in particular from the proposed model.

2 The Turkish Lira banknotes dataset

The chosen dataset <add ref> is originally composed of 6000 images of Turkish Lira banknotes, organized in folders grouping banknotes by their value and already splitted in training and validation set.

2.1 Preprocessing techniques applied to the dataset

To start the pre-processing phase, it's needed to scale the images to a more appropriate size to not overload the machine memory; the size scale factor used in this project is 5. The given dataset was provided with two text files listing the images belonging to the training and to the validation datasets; using this lists, the images files have been divided in the two respective labeled datasets. The training dataset has been created using a "prefetch dataset" and the validation dataset has been created using a "repeat dataset" both using also batching and caching techniques.

2.2 Considered algorithms and their implmentation

?

3 Scalability of the proposed solution

The Scalability of this project is granted by (batching, caching, img scaling,
? ...)

4 Experiments and results

Different models have been tested during the developing process; in this section some of those will be shown and the relative results will be discussed. (aggiungere modelli e screen dei grafici che fanno spessore e cosa va e cosa non va nei vari modelli)

5 Conclusions

As seen in the previous sections, after a few experiments, this project has been succesful in classifying the images of Turkish Lira banknotes with high accuracy and low data loss. (altro?)

Esempio di citazione[1]

References

- [1] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The L^AT_EX Companion*. Addison-Wesley, Reading, Massachusetts, 1993.
- [2] Albert Einstein. *Zur Elektrodynamik bewegter Körper*. (German) [*On the electrodynamics of moving bodies*]. Annalen der Physik, 322(10):891–921, 1905.
- [3] Knuth: Computers and Typesetting,
<http://www-cs-faculty.stanford.edu/~uno/abcde.html>