

Distributed machine learning on mobile platform with Deeplearning4J

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Abstract

There are many solutions to handle big data and most of them use some kind of parallelism. The easiest way that most of our software implement is data parallelism, because it's easy to use and more universal than other distribution techniques. This distribution technique is about splitting data into smaller datasets then machine learning models can be trained on them. These submodels can be combined to a bigger, more complex model with the synchronization process. This originally happens on a server or in a cluster environment. There are many projects focusing on utilization of mobile devices in different ways. Some are building mobile clusters to mine cryptocurrency; some are trying to create desktop experience with it. The present work focuses on utilizing mobile devices' capacities for distributed machine learning purposes, using the Deeplearning4J library. The presentation will include the synchronization problem, the architecture of the created software, the communication between the client and the server and the way, how data parallelism works with mobiles. The last part of the presentation will show the performance of the system and the efficiency of mobiles in machine learning.

Keywords: machine learning, distribution, mobile, data parallelism, web service