Research and Reviews: Journal of Global Researh in Computer Science

Extended Abstract
Vol. 9, Iss. 4
2018

Machine Learning 2018: NumPyCNNAndroid: A library for clear execution of convolutional neural systems for android gadgets- Ahmed Fawzy Mohamed Gad- Menoufia University

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Another open source library called NumPyCNNAndroid is recommended that limits the overhead of building and running convolutional neural systems on android gadgets. The library is written in Python 3. It utilizes Kivy for building the application interface and numerical python for building the system itself. The library underpins the most well-known layers. Contrasted with the generally known profound learning libraries, NumPyCNNAndroid maintains a strategic distance from the additional overhead of making the system appropriate for running on cell phones. The test results approve the rightness of the library execution by looking at results from both the proposed library and TensorFlow dependent on mean supreme blunder.NumPyCNNAndroid is an undertaking that assembles convolutional neural systems for Android gadgets utilizing NumPy and Kivy.

The application is intended to deal with every three progressive conv-relu-pool layers, show their yields, return so the client can execute the following three layers by clicking a catch at the base of the screen. The past outcome before tapping the catch will be utilized for additional handling. This venture depends on a past undertaking called NumPyCNN yet NumPyCNNAndroid it is currently taking a shot at Android.

With the recent advances in mobile system-on-chip (SoC)technologies, the performance of portable Android deviceshas increased by a multiple over the past years. With theirmulti-core processors, dedicated GPUs, and gigabytes ofRAM, the capabilities of current smartphones have alreadygone far beyond running the standard built-in phone applica-tions or simple mobile games. Whereas their computationalpower already significantly exceeds the needs of most every-day use cases, artificial intelligence algorithms still remainchallenging even for high-end smartphones and tablets.

Many recent developments in deep learning are, however,tightly connected to tasks meant for mobile devices. One no-table group of such tasks is concerned with computer visionproblems like image classification,image enhance-ment and super-resolution ,optical characterrecognition, object tracking ,visual scene under-standing, face detection and recognition ,gazetracking etc. Another group of tasks encompasses vari-ous natural language processing problems such as natural lan-guage translation ,sentence completion , sen-tence sentiment analysis ,or interactive chatbots .A separte group deals with on-line sensor data processing forhuman activity recognition from accelerometer data ,gesture recognition or sleep monitoring .Severalother deep learning problems on smartphones are related tospeech recognition, virtual reality and many other tasks.Despite the rising interest in deep learning for mobile ap-plications, the majority of AI algorithms are either not avail-able on smartphones or are executed on remote servers dueto the aforementioned phones' hardware limitations. The lat-ter option is also not flawless, causing: a) privacy issues; b) dependency on an internet connection; c) delays associatedwith network latency; d) bottleneck problems — the numberof possible clients depends on the servers' computational ca-pabilities. To overcome these issues, there were a number ofattempts to port separate algorithms or whole machine learn-ing libraries to mobile platforms with added hardware accel-eration (HA) using GPUs or DSPs. In the

This work is partly presented at 5th World Machine Learning and Deep Learning Congress and World Congress on Computer Science, Machine Learning and Big Data On August 30-31, 2018 at Dubai, UAE

authors imple-mented a mobile neural network classification engine capableof sensor inference tasks on Qualcomm's Hexagon DSP .Though they achieved very impressive energy consumptionresults, the DSP was able to run only very simple CNN modelsdue to its small program and memory space. In the au-thors presented a GPU-accelerated library CNNdroid for par-allel execution of pre-trained CNNs on mobile GPUs

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