Working Student Position
Advisor: Nael Fasfous

Benchmarking CNNs on Hardware Accelerators for Embedded Applications

**Topic Description**
Convolutional Neural Networks (CNNs) are the state of the art for most computer vision tasks. Although their accuracy is unrivaled when compared to classical segmentation and classification algorithms, they present many challenges for implementation on hardware platforms. Most performant CNNs tend to be computationally complex for low-power embedded applications. Finding a good trade-off between accuracy and efficiency can be critical when deciding the network architecture and the target hardware.

This work focuses on benchmarking different CNNs on existing hardware accelerators in order to find solutions for different embedded application scenarios.

**Prerequisites**
To successfully complete this project, you should have the following skills and experiences:
- Very good programming skills in HDL/HLS
- Basic programming skills in Python and Tensorflow
- Good knowledge of neural networks, particularly convolutional neural networks

The student is expected to be highly motivated and independent. By completing this project, you will be able to:
- Assess the feasibility of a CNN-Accelerator for a given application
- Optimize CNNs and their target hardware accelerator to improve overall system performance
- Test and evaluate solutions for correctness and applicability
- Present your work in the form of a scientific report

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