Paper Title:
Towards Edge-enabled Distributed Computing Framework for Heterogeneous Android-based Devices

Paper Link:
https://ieeexplore.ieee.org/document/9996723

1 - Summary:

1.1 Motivation: The paper proposes an Android-based Distributed computing framework for accelerating DNN inference on edge computing devices. A scalable framework which reduces cpu utilization and power consumption without causing high-bandwidth throughput.

1.2 Contribution: This research aims to use the distributed computing framework to enable co-operation among android based edge devices in a distributed manner, accelerate DNN inference, enrich functionality of edge devices and enhance user experience.

1.3 Methodology: The authors selected android based smart home edge computing devices to base their work on. Dataset was collected from the PDTV dataset which is a public dataset of traffic videos. The YOLO model was chosen as the preferred model. YOLOv3 and YOLOv3 - Tiny to specific. The TensorFlow Lite Framework was adopted for DNN inference and to support complex and sophisticated edge application in distributed computing. Both standalone and distributed computing was tested.

1.4 Conclusion: The paper presents an Android based Distributed computing framework for accelerating edge computing capabilities to compute DNN inference distributively. As the number of devices increases the cpu and power consumption decreases. The paper also demonstrates that the proposed framework will not lead to a high bandwidth footprint.

2 - Limitations:

2.1 First Limitation: A relatively small number of devices are ineffective in reducing the power and cpu strains. It is expected as when the edge devices are low in number its performance takes a plunge.

3 - Synthesis:

The study holds promise for facilitating in multiple sectors of home automation and security. An optimized framework would be crucial for home security which will assist data to be processed locally rather than relying on cloud computing.