Brodmann17

arm

Fast perception software for Arm-based processors

The way we drive is changing

Automated driving requires a wide variety of perception solutions that perfectly combine hardware and software without vendor lock-in. Ranging from relatively simple automated parking, through rear camera systems to compute-intensive frontal ADAS, each of these products has different requirements, bill of materials, camera specifications, perception feature set and so on.

Goal

Deep learning is trained on a fixed static setup and so changes to the camera, hardware platform, and the angle of attachment could severely impact performance. The main goal is to provide the most efficient perception solution for different types of products without compromising the quality and accuracy of the model.

Challenge

Current solutions for automated driving are mostly based on bulky, high-power and costly standalone GPU chips. However, to make it suitable for widespread commercial use, Tier1 and OEMs are looking for a more power-efficient and cost-effective solution suitable for mass production.

Achieving that requires a whopping 20X performance improvement over open-source ML algorithms, while maintaining exceptional accuracy. The combination of advanced Brodmann17 technology and the wide range of efficient Arm-based SoCs could be the answer to all these use cases.

Solution

Brodmann17's patented technology provides the next generation of perception for automated driving solutions. Their revolutionary Deep Neural Network (DNN) architecture requires only a fraction of the usual computing power and can run highly-accurate computer vision on low-power Arm processors, ideal for mass production.

"Arm's Automotive Enhanced CPUs, part of the Arm Safety Ready portfolio, are an excellent baseline for the Brodmann17 software"
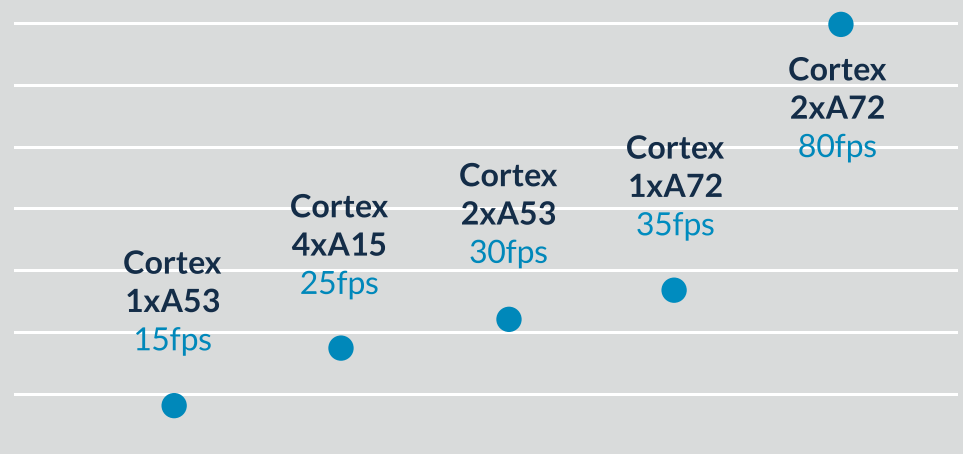
Arm's Automotive Enhanced CPUs, part of the Arm Safety Ready portfolio, are an excellent baseline for the Brodmann17 software and this synergy provides scalable robust perception.

The resulting solution has created significant commercial opportunities and joint partners, laying the foundations for mass production of automotive AI that perfectly combines hardware and software. Brodmann17 can also take advantage of the Arm Compute Library for an easy and intuitive development approach, gaining interoperability through a single API.

Deep-learning detection that scales from low-cost MCUs to high-end CPUs

Standard HD input resolution: 1280x720

Min object size (80m) 25x25 pixels

Cortex 1xA53
15fps

Cortex 4xA15
25fps

Cortex 2xA53
30fps

Cortex 1xA72
35fps

Cortex 2xA72
80fps

Results

Benchmark results and product success show that combining the Brodmann17 perception technology with Arm Safety Ready CPUs and optimized libraries can achieve amazing results for ADAS applications. As demonstrated above, the combined solution achieved the target improvement in performance while maintaining outstanding accuracy and is already field-proven thanks to joint partners.

For more information about Brodmann17:
www.Brodmann17.com

See these related links for more information:
Arm Automotive solutions
Arm Autonomous Drive solutions
Arm Safety Ready Portfolio