

Image-Base Forward Sensing System on NXP i.MX 8M Plus

Overview

Based on NXP i.MX 8M Plus SoC to make up Image-Base Forward Sensing System by the software solution. It uses forward-facing narrow-angle/wide-angle cameras and software solutions to implement the Image-Base Forward Sensing System. Compensates for image-based FCWS failure conditions caused by weather, driving environment and lighting, improving driving safety and reducing the likelihood of accidents.

According to lightweight and merging deep learning architectures, computer vision, computer graphics, heterogeneous multi-core scheduling, and memory access optimization technologies to solve challenges in image quality, variable driving environments, and hardware resource requirements. This solution could be the cost-effective purpose, and speed up time to marking, reduce R&D costs, and enhance product differentiation and competitiveness.

Strength

1. Technologies with 100% self-development to support customization and software defined products.
2. Customized lightweight and merging deep learning architectures based on I.MX 8 M+'s 2.25 Tops NPU.
3. AI architecture modification is based on IMX 93 NPU Ethos to increase accuracy and computing performance.
4. Merge two kinds of cameras, narrow-angle camera cover the long range detection and wide-angle camera cover the close range detection.
5. Support production tools to reduce requirements of FAE resources.
6. On-board calibration tool supporting, and small space requirement for the calibration processes.
7. One model supports multi-camera and multi-function to reduce requirements of computing power and memory.

Feature

1. FCWS Box includes 4-wheel vehicles, 2-wheel vehicles, pedestrians detection, and is adaptable to different road types and weather, which of vertical distance is up to 150M and horizontal distance is between -4M to +4M.
2. LDWS Box includes multi-lane and curved-lane detection, and is adaptable to different road types and weather.
3. Support TTC warning time adjustment.

Block Diagram

