Advanced Driver Assistance Systems

About Us
PathPartner based out of California, USA and Bangalore, India is a leading provider of Consulting, Services and Solutions for digital media centric devices market. Our services range from Product Engineering/R&D and System Integration to Middleware, Applications and System solutions.

PathPartner’s Advance Driver Assistance Systems pave way for safe drive providing the driver with the needed information leading to reduce the impact of accidents. PathPartner specializes in development and optimization of vision algorithms for industrial vision and Advanced Driver Assistance Systems (ADAS) with wide expertise in image processing domain.

PathPartner’s Licensable IPs
Real Time Driver Drowsiness Detection Solution
PathPartner’s vision based Drowsiness detection system is a natural, non-intrusive technique to monitor the fatigue or drowsiness of driver by sounding an alarm when the driver feels drowsy. The solution is highly optimized on TI’s DSP. The solution is available on DM814x & TDA2x platform with a performance of 30 fps & an accuracy of 90 % for CIF (352x288) resolution.

Pedestrian Detection Algorithm
PathPartner’s Pedestrian Detection is a real time algorithm that takes input from a moving camera to detect pedestrians (both stationary & moving pedestrians) in the vehicle path and warn the vehicle operator the danger of potential collision via alarm when pedestrian is detected. The algorithm supports handling of occlusions as well.

Eye Gaze Detection Algorithm
PathPartner’s eye gaze detection is a non-intrusive technique that captures the user’s face and detects the direction of the eye. The algorithm, firstly, carries out detection of face in the image, secondly, uses attributes of face for localization of ROI and lastly, detects eye using image gradients. The algorithms can be used to monitor the Driver’s attentiveness in transport vehicles.

Gesture Detection
PathPartner’s gesture detection algorithm is based on Intel’s PCSDK platform. The algorithm uses gestures from the Driver to control the playback features of multimedia system in the vehicle's infotainment system. The algorithm is non-intrusive and thus, it helps driver to focus on safe driving without the need to focus on controlling the IVI system intrusively.
PathPartner’s Expertise - Automotive (IVI + ADAS)

**Infotainment (IVI) Applications**
- Video Codecs Integration
- Audio Codecs Integration
- Parsers \ Muxers for Containers
- G-Streamer Plugins Or Directshow filters development
- Streaming Stack Integration
- Connectivity to peripherals such as Bluetooth, USB and Ethernet
- Miracast Stack Integration
- Mirror Link Stack Integration

**ADAS Applications**
- Driver Drowsiness Detection
- Back Over Prevention/Protection
- Pedestrian detection
- Surround View Camera
- Eye Gaze Detection

**Multimedia Stack Integration**
- OS for In Vehicle Infotainment (IVI)
- Embedded Vision SDKs / Libraries

**ADAS Algorithms**
- Harris Score, Kalman Filtering, HoG, Gaussian & Laplacian Filtering, NMS, Canny Edge Detection, Image enhancement Algorithms, etc.,
- Face Detection, Background subtraction, Motion detection and tracking
- These Kernels are ported and optimized in embedded platforms like DSP, HW Accelerators, ARM and SoCs
- Automotive Vision SDK

**OS for ADAS**

**Supported Platforms**
- TDA2x
- Jacinto6
- i.MX 6
- DM814x
- Qualcomm’s Snapdragon

**Supported Processors**
- ARM - Cortex-Ax series
- x86
- C64x+, C674x, C66x
- Hexagon DSP

**Supported Vector Cores**
- SIMCOP (i.MX) from TI
- Embedded Vision Engine from TI
- Power VR GPUs, Intel’s GPUs, AMD’s GPU (programming using OpenCL)

**ADAS Services offered by PathPartner**
- Development & validation of ADAS algorithms such as Fog Removal, Surround View, Back Over Prevention (assisting in vehicle Parking), Lane Departure Warning, & Traffic Sign recognition
- Optimization of vision/ADAS algorithms on ARM, DSP and specialized vision coprocessor architectures
- System integration of vision algorithms to ADAS or IVI system
- Development of ADAS application software’s for various use cases such as Stitching images for Surround View, Raw Ethernet streaming, Back Object Detection and other ADAS use cases
- Automotive platform bring up – adding BSP support for various peripherals such as multiple cameras, HDMI display and Ethernet of ADAS HW platforms and integrating Operating Systems with the BSP to create SDKs on platforms
- Adding support for multiple operating systems on single platform for ADAS + IVI use case with or without Hypervisor
- Ensuring compliance of the software for Automotive standards

**Stay Connected!**

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