Autonomous Solutions – Company Profile
AdasWorks

Company: AdasWorks GmbH
Szepvolgyi ut 39
1037 Budapest, Hungary
Website: https://adasworks.com/
Category: Software
Sub Category: Algorithm, Sensor Fusion

Company Overview:
AdasWorks is a startup based in Budapest, Hungary that offers a software toolkit that fuses multiple car sensors, GPS and map data with computer vision to create driver assistance and semi-autonomous systems.

AdasWorks has approximately 15 employees and was a spin-off of Kishonti Ltd. (Budapest, Hungary) who is a leader in graphics and computer intensive applications as well as benchmarking and performance optimization.

AdasWorks is incorporated in Stuttgart, Germany, but operates out of Budapest. AdasWorks is currently engaged with a number of OEMs and tier-1 suppliers on active safety and autonomous control features.

AdasWorks is a spin off from Kishonti Kft in 2014. AdasWorks raised $2.5 million in July of 2015 in a Series A funding. Investors were Robert Bosch Venture Capital and Inventure. OTP-Day One, Nvidia, and Tim Draper were early venture capital investors.

Why This Company is Important:
- AdasWorks are experts in computer vision and claim they offer a solution that blends computer vision with detailed map data.
- AdasWork is developing a data acquisition solution with an unnamed automotive map provider.
- AdasWorks have partnered with ThyssenKrupp Presta, a unit of ThyssenKrupp that specializes in trajectory controlled and fault tolerant steering systems.
- AdasWorks claims numerous camera solutions supporting object detection/movement, classification, pothole detection and freespace estimation.
- AdasWorks claims they are hardware agnostic and can support numerous compute options whether it be SoCs, FPGA, DSPs, GPUs etc.
Partnerships:

AdasWorks is an active member of the Khronos Group and supports various programming languages including (Open GL, Open CL, Open VX). AdasWorks is also a member of Embedded Vision Alliance and the Open Geospatial Consortium.

According to the AdasWorks website, the company has development partnerships with ARM, Nvidia, Samsung, Intel, ThyssenKrupp, and Qualcomm.

Product:

AdasWorks is a software toolkit that fuses one or more sensors with computer vision to create assisted driving features and semi-autonomous control systems. AdasWorks is designed to support a sensing domain combined of one or more camera sensors but their literature says they can support Lidar and radar as well.

AdasWorks has a close working relationship with ThyssenKrupp Presta and together they have demonstrated piloted driving functions with a test vehicle.

AdasWorks software toolkit provides builders of autonomous systems a software development kit for supporting the following features:

- Pedestrian detection and tracking
- Lane detection
- Vehicle detection
- Road surface detection
- Traffic sign recognition
- Depth calculation
- Freespace estimation
- Time To Collision (TTC) calculation
- Vehicle trajectory

A key element of the software functionality is the ability to provide the inputs to support a trajectory algorithm that detects the center of the road and based on the visible length and curvature, computes the vehicle trajectory and the safe speed.
Autonomous Car Project:

In partnership with ThyssenKrupp Presta, AdasWorks set out to develop a self-driving car based on the Mercedes Benz C200 that was recently tested at a racetrack in Hungary.

For this concept vehicle, the AdasWorks Automated Driving solution relies only on vision-based information processed from one front-facing camera. The intelligence is provided by a small electronic control unit consisting of an Nvidia Tegra K1 application processor, running AdasWorks software and a watchdog safety system by ThyssenKrupp.

For this project AdasWorks uses the Flea3 (FL3-U3-13E4C-C) 1.3 MP camera from Point Grey (Richmond, BC, Canada) which was mounted to the front of the car. Images captured by the camera were then transferred over a USB 3.0 interface to the electronic control unit.

Based on the analysis of the scene in front of the vehicle, the AdasWorks software extracts the trajectory -- or the position of the vehicle over time -- from the image data, as well as computes the desired amount of acceleration or braking that should be applied to maintain a safe speed. Having done so, the data are transferred over an Ethernet interface to a MicroAutoBox Power PC-based system from dSPACE (Paderborn, Germany).

ThyssenKrupp Presta Hungary has developed a trajectory controller algorithm, which was running on the dSPACE hardware and calculates the steering angle based on the actual position of the vehicle and the received trajectory points.

According to ThyssenKrupp Presta, the trajectory planning and the control of the vehicle dynamics - both in longitudinal and lateral directions - as well as the control of the steering including other actuators are developed by ThyssenKrupp. The sensing of the environment and data processing is done by AdasWorks.

Resource Links

Vehicle Demo ➔ https://www.youtube.com/watch?v=37cOQS9gc1w


Pedestrian Detection ➔ https://adasworks.com/video/Pedestrian_Tracking.mp4

Steering ➔ https://adasworks.com/video/Self_Steering.mp4

Navigation ➔ https://navigenie.com/demo/instantmap_pr_720_m.mp4