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ITEA 3 is a EUREKA strategic ICT cluster programme

Exploitable Results by Third Parties

ITEA 3 15042 DANGUN

Project details

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Name: Computer Controllable Electric Vehicle (EV) Platform		
Input(s):	Main feature(s)	Output(s):
▪ Conventional Renault Zoe (Electric Car)	▪ An experimental vehicle based on Renault Zoe whose actuators (steering, brakes and engine) and accessories (blinkers, horn, etc.) can be computer controlled ▪ It allows to integrate and experiment Autonomous Driving systems ▪ It provides a power box necessary to supply the embedded devices (computers, sensors, etc.)	▪ Drive by wire Renault Zoe

Unique Selling Proposition(s):	▪ Based on an electric vehicle ▪ Developed with deep knowledge of the Renault Zoe on which it is based ▪ Developed with concerns about safety
Integration constraint(s):	▪ All interfaces with the vehicle actuators done through CAN ▪ Actuators limitations
Intended user(s):	▪ Developers of autonomous driving technologies
Provider:	▪ Renault
Contact point:	▪ Javier Ibanez-Guzman (javier.ibanez-guzman@renault.com)
Condition(s) for reuse:	▪ Confidential
	Latest update: 12/06/2019

Name: Hardware of Mono Camera System		
Input(s):	Main feature(s)	Output(s):
▪ Raw image ▪ Vehicle CAN	▪ Front mono camera system for obstacle avoidance and lane keeping assistance	▪ Sensing result of mono camera system

Unique Selling Proposition(s):	▪ Higher resolution (2880 x 1080 pixels, 3.1MP) of mono camera, and higher frame Rate (44fps) ▪ Wider FOV (Field of View, Horizon: 125° / Vertical: 40.1°), and Longer detection range ▪ Processors with higher computational powers
Integration constraint(s):	▪ Output of protocol: Ethernet ▪ Required debugger board for receiving CAN
Intended user(s):	▪ System integrators for Traffic Jam Assist
Provider:	▪ LG Electronics
Contact point:	▪ Minsu Park (peterpms.park@lge.com)
Condition(s) for reuse:	▪ Licencing
	Latest update: 07/06/2019

Name: Software of Mono Camera System		
Input(s):	Main feature(s)	Output(s):
▪ Raw image ▪ Vehicle CAN ▪ The calibration result of mono camera system	▪ Algorithm of obstacle avoidance and lane keeping assistance	▪ Algorithm result of vehicle tracking and lane tracking

Unique Selling Proposition(s):	▪ Execution of dynamic calibration module in driving ▪ Detection and tracking of vehicle and lane at long distance
Integration constraint(s):	▪ Only longitudinal vehicle detection of objects ▪ Country dependency of yellow lane detection ▪ Limited range of lane tracking around curves
Intended user(s):	▪ System integrators for Traffic Jam Assist
Provider:	▪ LG Electronics
Contact point:	▪ Minsu Park (peterpms.park@lge.com)
Condition(s) for reuse:	▪ Licencing
	Latest update: 26/06/2019

Name: AVM Calibration Algorithm		
Input(s):	Main feature(s)	Output(s):
▪ Four camera Images	▪ Calculate camera's rotation/translation compare to the real world ▪ Make a one seamless image similar to looking down on the car above.	▪ Seamless Top-view image

Unique Selling Proposition(s):	▪ Calibration process is simple. ▪ Robust, stable algorithm. ▪ Ability to confirm pass/fail judgment in algorithm side.
Integration constraint(s):	▪ Feature extract algorithm. ▪ Calculating rotation/translation of the camera ▪ Converting fish-eye camera input to image plane. ▪ Homography transformation to top-view image plane. ▪ Good portability of algorithm (written in C++ language)
Intended user(s):	▪ Application developer, AVM developer. ▪ System Integrators for Traffic Jam Assist
Provider:	▪ LG Electronics
Contact point:	▪ Sekyu Lee (sekyu2.lee@lge.com)
Condition(s) for reuse:	▪ Licencing
	Latest update: 07/06/2019

Name: Lane Detection Algorithm using an AVM's top-view image		
Input(s):	Main feature(s)	Output(s):
▪ Top-view image	▪ Lane Detection Algorithm	▪ The distance between car and detected lane ▪ Confidence value of each lane

Unique Selling Proposition(s):	▪ Provide distance between cars and lines. ▪ Lightweight, portable, stable algorithm.
Integration constraint(s):	▪ CAN integration (output) ▪ Stable algorithm running constantly, endlessly, in any driving scene. ▪ No libraries needed to run the algorithm. ▪ Great code portability. (main algorithm written in C language only) ▪ Feature extraction, grouping algorithm.
Intended user(s):	▪ Programmers porting lane detection algorithm to platform. ▪ System Integrators for Traffic Jam Assist
Provider:	▪ LG Electronics
Contact point:	▪ Sekyu Lee (sekyu2.lee@lge.com)
Condition(s) for reuse:	▪ Licencing
	Latest update: 07/06/2019

Name: Short Range Radar		
Input(s):	Main feature(s)	Output(s):
▪ 77-79GHz Radar	▪ Automotive short-range radar ▪ Detection of surrounding objects ▪ 100m range (10 dBsm target)	▪ Object detection list ▪ Tracked object list

Unique Selling Proposition(s):	▪ Multimode radar ▪ Can support AEB, Traffic Jam Assist, Traffic Jam Pilot features ▪ Compact 65 x 77 x 15 mm
Integration constraint(s):	▪ Bumper or chassis mounting
Intended user(s):	▪ Car makers
Provider:	▪ Valeo
Contact point:	▪ Eric Amiot (eric.amiot@valeo.com)
Condition(s) for reuse:	▪ Commercial proposal on demand (77 GHz Band version)
	Latest update: 14/06/2019

Name: Data Convergence Algorithm for Lane Detection		
Input(s):	Main feature(s)	Output(s):
▪ Lane measurement from a front camera ▪ Lane measurement from an AVM system	▪ Convergence of lane information received from front camera and AVM ▪ Tracking the lane trajectory to reduce measurement noise and handle sensor's detection failure	▪ Converged lane information (geometry, width, and type)

Unique Selling Proposition(s):	▪ Continuous and robust lane detection through the complementary characteristics of two sensors ▪ Handling each sensor's noise and detection failure
Integration constraint(s):	▪ Supported sensors: front camera and AVM ▪ Compatible with C/C++
Intended user(s):	▪ System developers for Traffic Jam Assist
Provider:	▪ Hanyang University
Contact point:	▪ Myoungho Sunwoo (msunwoo@hanyang.ac.kr)
Condition(s) for reuse:	▪ Commercial license to be negotiated
	Latest update: 26/06/2019

Name: Data Convergence Algorithm for Object Detection		
Input(s):	Main feature(s)	Output(s):
▪ Object measurement from a front camera ▪ Object measurement from radar sensors	▪ Convergence of object information received from front camera and radars ▪ Object tracking algorithm to handle the temporary detection failure of each sensor	▪ Converged object information (position, orientation, and speed)

Unique Selling Proposition(s):	▪ Robust object detection using the complementary characteristics of multiple sensors ▪ AI-based motion prediction to estimate the future motions of surrounding vehicles ▪ Automatic selection of the preceding vehicle for a safe driving in cut-in situations
Integration constraint(s):	▪ Supported sensors: front camera and Radar sensors ▪ Compatible with C/C++
Intended user(s):	▪ System developers for Traffic Jam Assist
Provider:	▪ Hanyang University
Contact point:	▪ Myoungho Sunwoo (msunwoo@hanyang.ac.kr)
Condition(s) for reuse:	▪ Commercial license to be negotiated
	Latest update: 26/06/2019

Name: Vehicle Control Algorithm for TJA		
Input(s):	Main feature(s)	Output(s):
▪ Lane information (geometry, width, and type) ▪ Object information (position, orientation, and speed) ▪ Vehicle state (speed, acceleration, and status)	▪ Checking the vehicle status to handle a system failure ▪ Optimal path generation to drive in a lane ▪ Reference speed determination to maintain a safe distance from the preceding vehicle ▪ Target steering angle determination for following the optimal path ▪ Optimal acceleration calculation to track the reference speed	▪ Target steering angle ▪ Target acceleration

Unique Selling Proposition(s):	▪ Real-time generation of optimal steering angle and longitudinal acceleration for Traffic Jam Assist ▪ Risk maneuvers in case of an abnormal system condition ▪ Providing safe and comfortable maneuvers even in cut-in situations
Integration constraint(s):	▪ Lane detection algorithm with the C/C++ interface ▪ Object detection algorithm with the C/C++ interface ▪ Vehicle state acquisition through the C/C++ interface ▪ Vehicle controllers for steering angle and acceleration
Intended user(s):	▪ System developers for TJA (Traffic Jam Assist)
Provider:	▪ Hanyang University
Contact point:	▪ Myoungho Sunwoo (msunwoo@hanyang.ac.kr)
Condition(s) for reuse:	▪ Commercial license to be negotiated

Latest update: 26/06/2019

Name: Planning and Control Algorithms for Tele-operation Library		
Input(s):	Main feature(s)	Output(s):
▪ Localization of the car ▪ Destination point ▪ Optionally : a map of the environment	▪ Compute a feasible path to the destination, that respects the kinematic constraints of the car ▪ The path avoids obstacles of the map and obstacles added by the teleoperator ▪ The path is near optimal according to criteria of smoothness and length of the path ▪ Fast recomputation of the path by adding new obstacles	▪ A path to follow, avoiding obstacles

Unique Selling Proposition(s):	▪ State-of-the-art planning algorithm RRTˣ ▪ Fast recomputation of the path by adding new obstacles of dynamic obstacles ▪ Teleoperation method insensitive to communication lag/quality
Integration constraint(s):	▪ Boost version >= 1.58 ▪ Ubuntu 16.04 at least ▪ 8GB of RAM as the required minimum
Intended user(s):	▪ System developer of teleoperation system
Provider:	▪ ENSTA Paris
Contact point:	▪ David Filliat (david.filliat@ensta.fr)
Condition(s) for reuse:	▪ Commercial license to be negotiated

Latest update: 04/06/2019

Name: Human Machine Interface for Tele-operation		
Input(s):	Main feature(s)	Output(s):
	▪ Autonomous Car remote control through interactive path planning ▪ Adding/Removing of new obstacles ▪ Selection of the planning algorithm ▪ Optional display of debugging information about the planning process ▪ Panning and zooming of the scene ▪ Free viewing or egocentric view ▪ Communication with the car with status indicator ▪ Stopping and resuming the car motion ▪ Monitoring position and speed of the car during path following	

Unique Selling Proposition(s):	▪ Fast and responsive teleoperation interface based on path planning ▪ Cross platform implementation ▪ Pleasant and ergonomic graphical interface ▪ Provide all important information to the teleoperator
Integration constraint(s):	▪ Dependence on the Qt 5 library ▪ Dependence on the SFML 2.5 library ▪ Dependence on the ROS Kinetic library
Intended user(s):	▪ System developer of teleoperation system
Provider:	▪ ENSTA Paris
Contact point:	▪ David Filliat (david.filliat@ensta.fr)
Condition(s) for reuse:	▪ Commercial license to be negotiated

Latest update: 04/06/2019

Name: Integrated Perception and Control System		
Input(s):	Main feature(s)	Output(s):
▪ Vehicle ▪ Perception sensors ▪ Computing devices ▪ System architecture	▪ Integrated the perception and control systems ▪ Good accessibility for hardware maintenance and service ▪ Ventilation system for cooling down computing systems ▪ Display devices for a system operator	▪ Integrated perception and control system

Unique Selling Proposition(s):	▪ Adjustable mount for perception sensors ▪ System enclosure design for better accessibility and maintainability ▪ Enclosure ventilation system for effective heat dissipation ▪ Display monitor to show vehicle states ▪ LED indicator for fast recognition of vehicle condition
Integration constraint(s):	▪ Installation space inside a vehicle ▪ Power consumption requirements of numerous computing systems ▪ Installation requirements (FOV, Keep-out area etc.) of perception sensors
Intended user(s):	▪ Developers of autonomous driving technologies
Provider:	▪ Control-Works
Contact point:	▪ Minkwang Lee (mklee@control-works.co.kr)
Condition(s) for reuse:	▪ No license required

Latest update: 12/06/2019