



iGP: Autonomous Car

iGP Module: Around View Monitoring System for ADAS

Lead Supervisor: Dr. Hossam Hassan

Advanced driver assistance systems (ADAS) are systems developed to improve traffic safety by assisting car drivers and to reduce the number of road accidents. ADAS relies on the available sensors (e.g. GPS and Cameras) to improve driving comfort and safety by automatically recognizing and reacting to potentially dangerous traffic situations. Also, driver behavior can be monitored to detect drowsiness and hence decrease the risk of distracted driver.

Around view monitoring is now a commercial technology that helps car drivers to see the vehicle surroundings through a virtual bird's-eye view, as if someone is seeing the view from a top view. The Around View Monitor helps the driver visually confirm the vehicle's position relative to the lines around parking spaces and adjacent objects, allowing the driver to maneuver into parking spots easily. The Around View Monitor processes video from four cameras or more, displaying the composite footage on the screen as if there is a single birds-eye view camera right above the vehicle. The developed algorithm will be implemented on a DSP KIT to guarantee real time performance.

Although it is commercialized technology, there is much room for improvement and extending the application through:

1. Studying the alternatives and state of the art.
2. Understanding the disadvantages and coming up with innovative solutions.
3. Building the system through software.
4. Implementing the system through real-time optimal hardware as a product.
5. Extending the application to fuse images from surveillance cameras and around vehicles or buildings.
6. Testing the developed system.