

An Active Monocular Platform for Intelligent Vehicles: Design and Simulations

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Abstract

Intelligent vehicles have to perceive their environment in order to navigate and avoid collision. This capability is also important in other applications such as mobile robot navigation, Automated Guided Vehicles (AGVs) for automated material handling, intelligent transportation systems, rescue operations in natural disasters, and wildlife observation. Since angular rotations of the moving vehicle deteriorate the quality of the image, cameras have to be mounted on a stabilized platform. Further control is required if the cameras are expected to keep looking at an object of interest irrespective of the vehicle's translational motion. This paper describes designing a monocular vision, system kinematics, and dynamics analysis. Simulation results are also presented.