

ENVIRONMENT PERCEPTION FOR VEHICLE AUTONOMOUS NAVIGATION IN URBAN AREAS

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ABSTRACT

Since two decades, research programs have studied the concept of "intelligent vehicles". The aim is to develop an intelligent transportation system based on a fleet of fully automated cars designed [1], [2] for short trips at low speed in urban areas [3]. This system will offer advantages of high flexibility, efficiency, safety, and thus, will improve the quality of life in our cities (protection of the environment, better management of parking areas, etc.). One of the key functions that a such transportation system must achieve concerns vehicle autonomous navigation. This paper presents our research activities on environment perception for vehicle autonomous navigation using passive and active sensor technologies. We are particularly interested in stereo vision for obstacle detection, line following and landmarks recognition. The developed algorithms are implemented and tested using a fully automated vehicle platform (Robosoft's RobuCab) equipped with various sensors.