Abstract

Driving a vehicle is essentially a subconscious task performed by any human merely with the use of his vision and intelligence. The research in this meadow of designing systems to automate vehicle driving is primarily oriented towards using multiple cameras and 3-D sensors. But this approach is inconsistent with the natural behaviour of humans. This paper presents some of the facets of autonomous driving using the senses analogous to what humans possess - Vision and Intelligence; both artificial in this case. Methodologies to implement the same are designed wherein a single camera when complemented by a convex mirror will capture an omnidirectional view of the surroundings, eliminating the necessity of laser sensors. Further,
techniques are illustrated to plan the path of the vehicle by applying complex transform equations on the circular images appearing on the mirror captured by the camera. A steering mechanism is designed where an assembly consisting of a DC motor and a potentiometer is used to plan and control the exact degree of rotation of the steering wheel. This paper substantially aims at providing economical implementation solutions towards developing simplified autonomous vehicle driving control systems.

References


Index Terms

Computer Science     Artificial Intelligence

Keywords

Autonomous Vehicle   Omni-directional Camera   Vision Based Approach.