# Article information:

Path Planning on Large Curvature Roads Using Driver-Vehicle-Road System Based on the Kinematic Vehicle Model | IEEE Journals & Magazine | IEEE Xplore  
<https://ieeexplore.ieee.org/document/9627633>

# Article summary:

1. This paper investigates the path planning problem for autonomous vehicles (AVs) in conditions with large road curvatures, taking into account environmental safety constraints, driver comfort, and vehicle actuator constraints.

2. A Driver-Vehicle-Road (DVR) system is established based on a kinematic vehicle model and a two-point visual preview driver model to consider individual handling characteristics.

3. An artificial potential field (APF) method is proposed to generate a collision-free evasive path, and Linear-Time-Varying (LTV) model predictive control (MPC) is used to design the path planner.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Path Planning on Large Curvature Roads Using Driver-Vehicle-Road System Based on the Kinematic Vehicle Model” provides an overview of the research conducted by the authors regarding path planning for autonomous vehicles in conditions with large road curvatures. The article presents a comprehensive approach that takes into account environmental safety constraints, driver comfort, and vehicle actuator constraints when designing a path planner for AVs. The authors propose a Driver-Vehicle-Road (DVR) system based on a kinematic vehicle model and two-point visual preview driver model to consider individual handling characteristics of different drivers. Additionally, an artificial potential field (APF) method is proposed to generate a collision-free evasive path, and Linear-Time-Varying (LTV) model predictive control (MPC) is used to design the path planner.

The article appears to be reliable as it provides detailed information about the research conducted by the authors and includes references from other sources that support their claims. Furthermore, the authors provide evidence from CarSim simulations that illustrate how their proposed planner can provide individually safe trajectories for different drivers with good maneuverability on large curvature roads. However, there are some points of consideration that are not explored in this article such as how well their proposed approach performs in comparison to existing methods or how it could be improved further. Additionally, there are no counterarguments presented in this article which could have provided more insight into its trustworthiness and reliability.

# Topics for further research:

* Comparison of path planning methods for autonomous vehicles
* Performance evaluation of path planners for large curvature roads
* Improvements to artificial potential field methods
* Linear-Time-Varying model predictive control
* Driver-Vehicle-Road system based on kinematic vehicle model
* Counterarguments for path planning on large curvature roads

# Report location:

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