

Emulation system of driver's own driving

Work Overview

Fully-autonomous driving is one of the grand challenges in automobile control. One of the most valid policies in autonomous driving is to emulate driver's own driving. We place particular focus on replaying exactly the same driving as one that the driver did.

One of the methods of evaluating the performance of the autonomous driving is to analyze the driver's override.

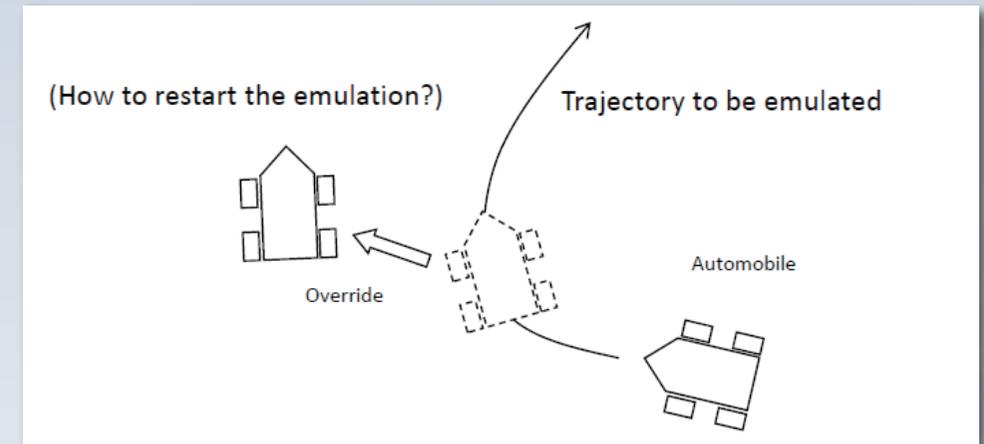
However, if once the driver overrode the autonomous driving, the problem is how to restart the autonomous driving when the automobile's position is off the trajectory is caused. In this work, we aim to develop an experiment environment for evaluating the performance of the autonomous driving. Especially, we develop a system for logging the data of the driver's own driving and emulating it, avoiding problem mentioned above.



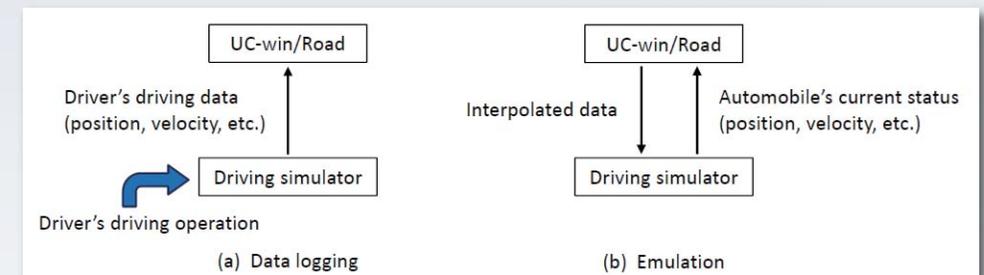
System Program

First, the driving of the driver must be recorded. While the driver drives the course of the experiment, the parameters necessary to emulate driving (time, steering wheel angle, throttle operation amount, etc..) are recorded in a file (csv format).

While reproducing the drive automatically, the driving parameters are sent to UC-win/Road. The recorded distance along the road (past driving) and the current distance are compared. If these two linear distances are the same, then the driving parameters of this distance are sent to UC-win/Road. Otherwise,



the driving information is created from the information of near distances by linear interpolation then sent to UC-win/Road. By the above steps, we can understand the autonomous driving that overcomes the problem about driver's override.



Future Work

1. We will improve the current program to make is stable in many driving scenarios.
2. We will continue to analyze the impact of the automatic driving on the driver in order to reduce the burden and actions required from the driver.