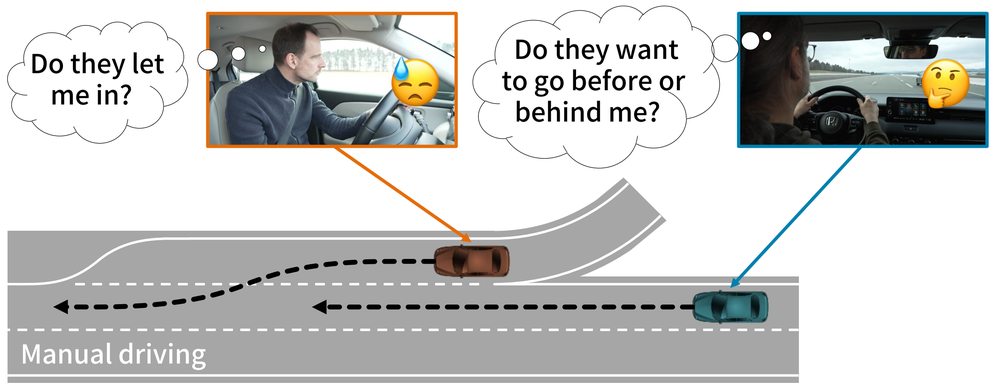
Automated merging at highway on-ramps based on V2V communication

Objective

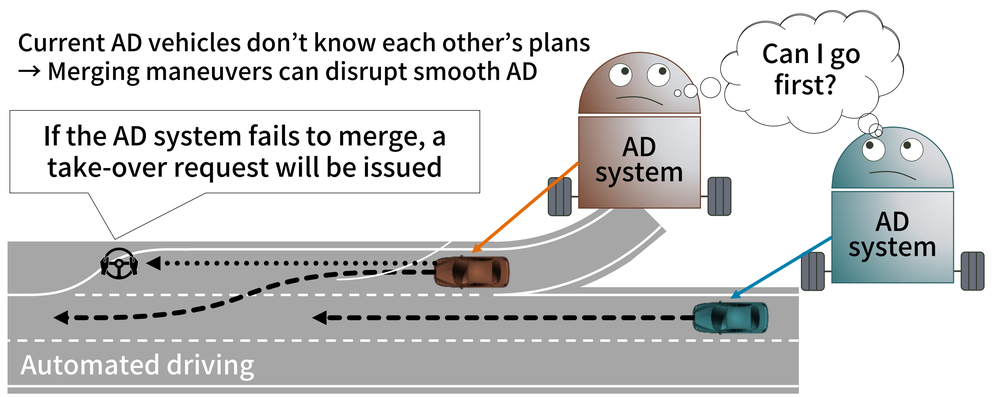
Ease on-ramp merging situations which can be challenging, as intentions are often unclear

Challenge while merging



Limit of automated driving (AD)

Current AD vehicles don't know each other's plans
→ Merging maneuvers can disrupt smooth AD

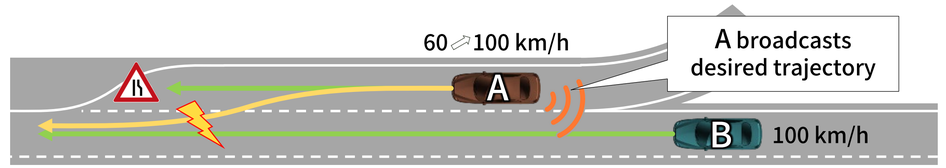


Technical Features

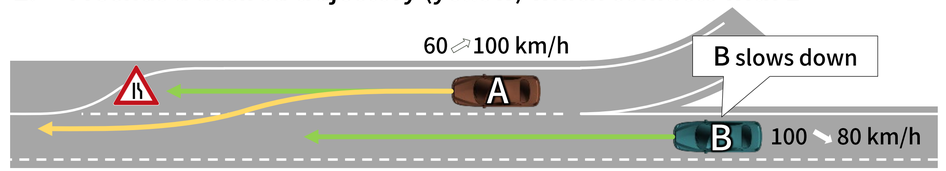
Allow for negotiation by sharing intentions via vehicle-to-vehicle (V2V) communication to achieve less take-over requests, more comfort and safety, and a smooth and safe traffic flow

Technology Details

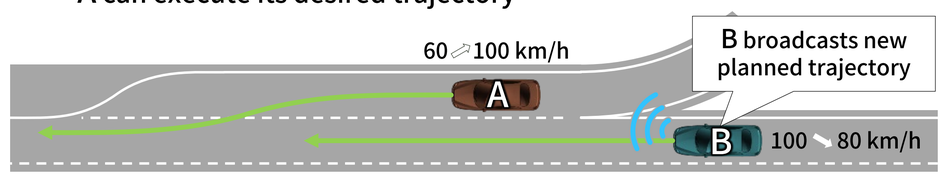
Connected AD



1. A aims to enter the highway, but can't change its planned trajectory (green), as the planned trajectory of B blocks the way
2. A sends a desired trajectory (yellow) which conflicts with B



3. B receives the desired trajectory of A
4. B slows down (and accordingly shortens its planned trajectory) so that A can execute its desired trajectory



5. B sends its new planned trajectory, which is received by A
6. A turns its desired trajectory into a planned trajectory

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Hi-Drive Designing Automation

HONDA