Can haptic steering guidance enhance learning of steering task for articulated vehicles?

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Project
Active Steering Force Feedback for Commercial Heavy Vehicles

Volvo Group Trucks
Chalmers
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- VehDyn Professor, Bengt Jacobson
- Steering Expert, Phd. Jochen Pohl
- Truck Controls Expert, Phd. Leo Laine
Normally steering feedback only comes from front axle!
And we use mirrors to track other axles!
How about, extending steering feedback!

Could this enhance learning of steering task for articulated vehicles?
Example of previous work


Yes, drivers can enhance learning of steering task.
Would this work on articulated vehicle?
Current Experiment Series, p1(2)
Enhance Learning of Steering Task in Articulated Vehicle

**Simple rules are used when driving an articulated vehicle**
(Claimed by many)

**Can we refine these rules by acting as a driving instructor?**

**to be continued...**
We are also looking into

Jack-knife
We are also looking into Swing-out
We are also looking into

Swept area
Hypothesis
Use force feedback as *envelope protection* for commercial heavy vehicle combinations

Boeing 777 design utilizes *envelope protection* with force feedback extensively
Ultimate Goal

To meet the traffic safety goals for 2020 with safe commercial heavy vehicles, future active steering systems introduced in such vehicles must provide an intuitive and informative steering force feedback to the driver about the vehicle combination’s stability envelope, blended with safe driving in traffic by guidance in lane, obstacle avoidance, and during automated emergency braking.