Learning self-driving

Ardi Tampuu, PhD
In ITS course 2022
Autonomous Driving Lab

Collaboration with Bolt, collaborations with other companies.

End-to-end driving

**Imitation** learning - train a model that gives same steering commands as a human

Sensor input + Model -> steering/throttle

**PROBLEM:** learning task != actual task

Momentary prediction vs sequential decision making
Deployment!

In many cases the *imitation ability does not reflect the performance on track*. Data is actually different and the task is actually different.

Cycle:

Get data - train model - deploy and monitor -

[analyze failure modes - improve data or model - deploy and monitor ] x N
Deployment in education

Will they let you deploy your customer behaviour prediction model?

Will they let you deploy you cancer prediction model?

Will we let you deploy your model on the Lexus?

Will we let you deploy your model on toy cars?
Self-driving competition 2022

Drive in a toy town with toy cars

Avoid obstacles
Self-driving competition 2023

Drive in a toy town with toy cars

Avoid obstacles + give way to car on the right + stop at pedestrian crossing
Read more and register!

E-mail: ardi.tampuu@ut.ee
Video