Motor vehicle

	Vehicle (car, truck, bus, bike, motocycle)	Rail	air	water	pedestrian	what	Human factors
safety						People Goods/freight	Connected vehicles
mobility							Autonomous vehicles
environment							
ilities							
Cyber security							

Notes from Lili Du

Challenge 1: human and autonomous system interaction

1. Human, not rational behavior; large scale, incentive change behavior
2. Heterogeneity : autonomous, non- autonomous, human-drive; transition period
3. Predict behavior, not for heterogeneity situation
4. Persuade driver to buy car with this features; some features are not happy with human
5. Two part of human factors: 1) driver behavior (long-term) under normal 2) reactive to sudden situation (short-term)
6. What is the intent of drivers? Variation between drivers' intent under same environment. (lane change, intersection). Autonomous vehicle
7. Human and infrastructure integration/interaction; cloud-vehicle systems; human role in auto

Challenge 2: security: Human concern about data sharing and use in connected vehicles

8. Human concern about data sharing and use
9. Malicious information

Challenge 3: Consumer acceptance and rejection

10. What we want, buy and use
11. Waze, how do human sensing and input affect traffic state, action, management
12. Reject new technology
13. People willing to have autonomous vehicle, accidence of the autonomous system; how to make people trust the system: data driven model
14. Over rely on the system
15. Restrict on the authorization
16. Adaptive learning the system
17. How fast people used to new technology/ technology transformation

Challenge 4: What is the information you need to detect, to be useful to identify the vehicle mode, state, and corresponding control

Challenge 5: New control theory to work on human driving behavior to obtain system benefit

18. Human people use control theory
19. Human in control system
20. Phycology
21. Data should be available; online model ; identify the behavior of human
22. Communication latency on control
23. Group level of individual human control
24. Strategies Model various people under different environment; How environment impacts human behavior

Challenge 6: Goods and freight

25. Safety issues as truck and car are mixed, both could be autonomous vehicles and human-driver
26. Using human language communicate to vehicle, translate the driver's language to understandable way to vehicle

What do we need to invest to get somewhere from now?

27. Make the system safer, share control
28. New technology

Key words: Modeling, intent, heterogeneity, acceptance and learning, share control; communication, privacy, information providing strategy

Notes from Lin

shared control heterogeneous systems

classify/describe/model driver/pedestrian state

emotion

group/population

incentives model

prediction technology

engagement of users

transparency of the control system

people reaction

human role in the control system

privacy in shared control

driver acceptance what do they want willing to buy

human implication (errors) in social media affect the management

situation awareness

vehicle model

control law

workload

new control guarantee

human model + control theory

interface with the controller

data driven

control latency vs human decision perception latency vs communication latency in theory

online training

user modality category

truck driver safety

vehicle breakdown/failure

maintenance of the vehicle

interfacing, natural language / gesture

what's driver's understandings of the system?

data collection

evaluation

unintended use of technology

understand the capacity of the system

black box for vehicles

1. modeling
2. intent
3. heterogeneity
4. acceptance and learning
5. shared control
6. communication
7. privacy
8. information