The Role of People in Increasingly Autonomous Truck Systems
The Role of People in Increasingly Autonomous Truck Systems

- Automation does not eliminate people (or errors), but changes their roles (and errors)

- Beyond interface design: A systems perspective to supporting workers

- Trucks as a network, not independent units
Automation does not eliminate people, but changes their roles

- Not all driving is the same
- Truck drivers do more than drive
- Automation eliminates tasks, but also generates tasks (and errors)
Not all driving is the same
Truck drivers do more than drive
Automation introduces new tasks and new errors
Human and automation errors

37,461 Fatalities (2016)
94% Human error
- Alcohol
- Speeding
- Distraction
- Drowsiness

Automation-related Fatalities?
Human and automation errors: Automation may be more safe, but feel less safe

- Dread risk—Risks that are uncontrollable and unobservable
- Dread risk ~1000XActual Risk
Trust in automation depends on stories not statistics

- Overconfidence leads to harshly judging automation errors and not appreciating automation successes

- Availability heuristic makes truck crashes seem common
  
  1 crash with 100 deaths
  
  ≠
  
  100 crashes with 1 death each

- Opaque automation fosters distrust
Roomba: The “autonomous” cleaner

- Rude to bystanders
- Requires infrastructure adjustments
- Unintended reconfigurations cause problems
- Dutifully attempts the impossible

Changes my role in cleaning, but does not replace

Beyond the interface: A systems perspective to supporting workers

**Job Design**

**Job Characteristics**
- Significance
- Identity
- Variety
- Autonomy
- Feedback

**Task Load and Balance**
- Cognitive
- Physical
- Social
- Technical

Trucks as networks
Trucks as networks: Driving as social interactions with others
Trucks as networks: Congestion as network disruptions

Trucks as networks: Market “glitches” as an explanation
Trucks as networks: Networks within the vehicle
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