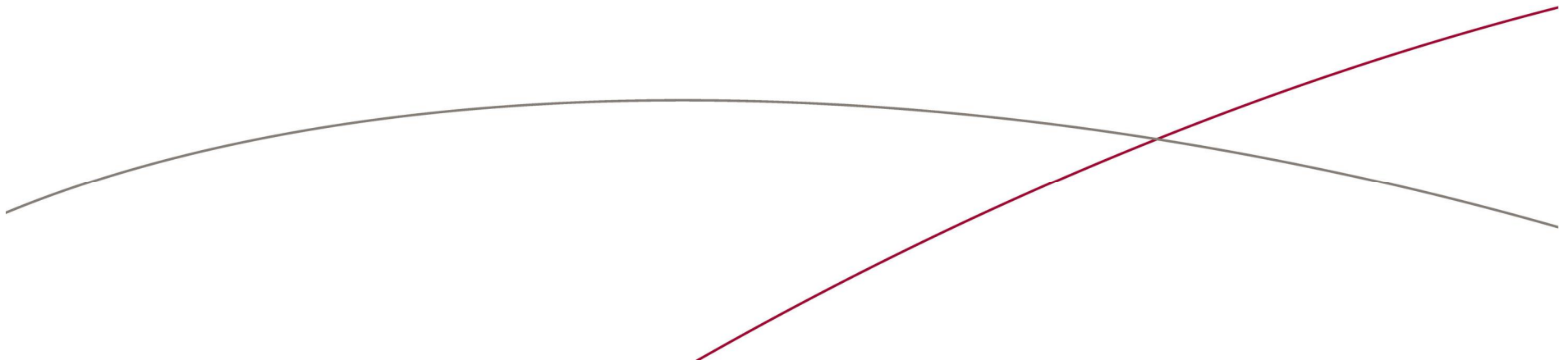


# Driver usage and understanding of adaptive cruise control

Annika Larsson  
Lund University



# Introduction

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Automation increasingly part of everyday driving  
• not perfect yet, though

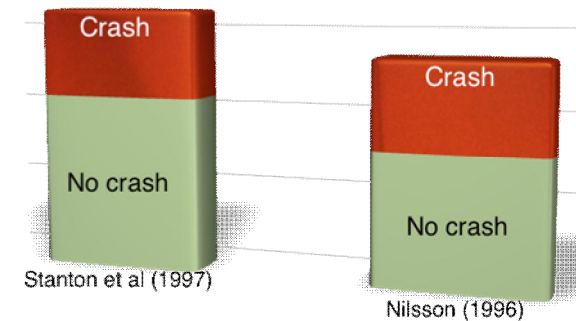
Driver needs to reclaim control . we need to know more!

Study: Questionnaire to 130 ACC users  
How ACC is used, what drivers think about the system



# Issues in reclaiming control

“ Are system limitations known to the driver?



“ Can the driver be supported by removing driving tasks?

“ Does the driver understand what the system is doing?



“ Can we rely on driver monitoring of system performance?



# Results

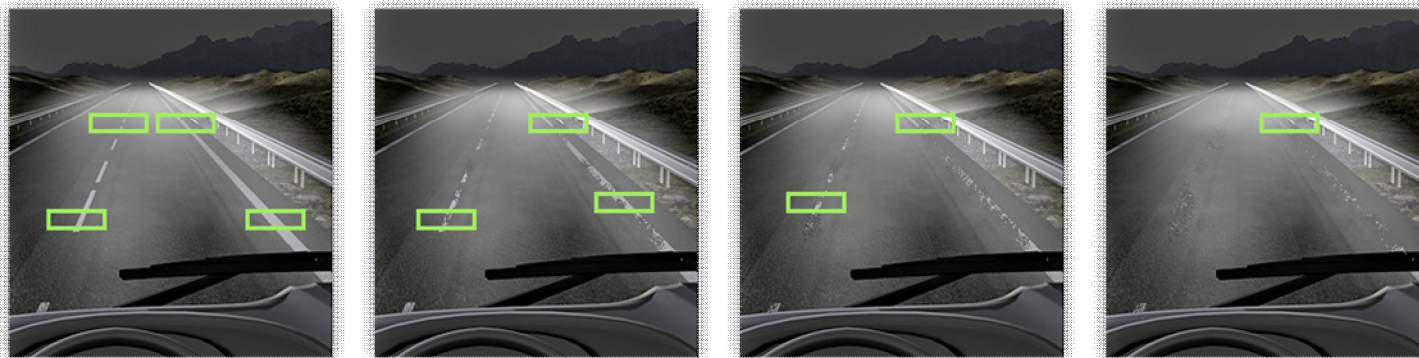
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- “ Drivers learn more about system limitations over time
  
- “ System limitations cause transfer of control
  - . Sharp turns
  - . Roundabouts
  - . Etc
  
- “ Frequent transfers of control may be better than infrequent transfers
  
- “ Drivers are not always aware if the system is on/off



# Resilience

Increasing performance does not imply creating a safer car-human system when automation fails



**It may be relevant to communicate detection decrements,  
not only that detection has been lost**



# The three W's

- “ Why does the driver reclaim control?
- “ When does the driver reclaim control?
- “ What happens when the driver reclaims control?



# Future research

## “ Transfer of control

- . How do drivers experience delegating control to a system?
- . How do they experience the transfer of control?

## “ Perception and attention

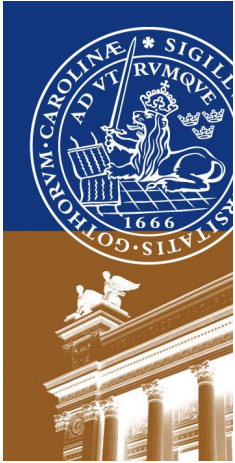
- . What are the effects on driver perception and attention?
- . Is %mode error+a suitable concept in this area as well?



# Summary

- “ Need to know more about the transfers
  - . Effects on cognition
  - . Effects on performance (joint and human)
  - . Effects over time
  
- “ Now: Studying different ways to delegate control, and the effects on driver cognition and planning





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[annika.larsson@tft.lth.se](mailto:annika.larsson@tft.lth.se)

