In Motion: Part 2 Future of Autonomous Vehicle Technologies

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- Current research:
  1) Understanding drivers' perceptions, including individuals across the life span with and without disabilities and Veterans, towards autonomous vehicles
  2) Investigation of motion and simulator sickness in autonomous vehicle technology

- Accomplishments: 14 publications and 26 poster/oral presentations

Acknowledgement

Funding Agency

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Research Team

- I-DAPT Institute
- MAP Lab
- Other Departments in UF
- UAB
- The Villages

Stakeholders

- Transdev
- City of Gainesville
- Oak Hammock Residential Community
- UF Transportation Institute
- FDOT
- Center for Independent Living of North Central Florida
- Norman Fixel Institute for Neurological Diseases
- Division of Vocational Rehabilitation, Gainesville
- Participants

Background

Background

Background

Background – Levels of Automation

Level	Name	Execution of steering and acceleration / deceleration	Monitoring of driving environment	Fallback performance of dynamic driving task	System capability (driving modes)
Human driver monitors the driving environment					
0	No Automation				n/a
1	Driver Assistance				Some driving modes
2	Partial Automation				Some driving modes
Automated driving system monitors the driving environment					
3	Conditional Automation				Some driving modes
4	High Automation				Some driving modes
5	Full Automation				All driving modes

Hands off, eyes off, mind off, feet off

Society of Automotive Engineers International, 2021

Background – Levels of Automation

Background

1. Acceptance and Adoption
2. Safety and Trust
3. Regulatory and Policy Development
4. User Experience Design
5. Ethical Considerations
6. Education and Awareness

Background

Background

1. Older adults
2. Younger and middle-aged adults
3. People with disabilities (PwDs; visual, hearing, ambulatory, sensory, self-care, and/or independent living impairment)
4. Veterans
5. IVIS and ADAS
6. PD and AVs

Methods

n = 104

n = 106

n = 42

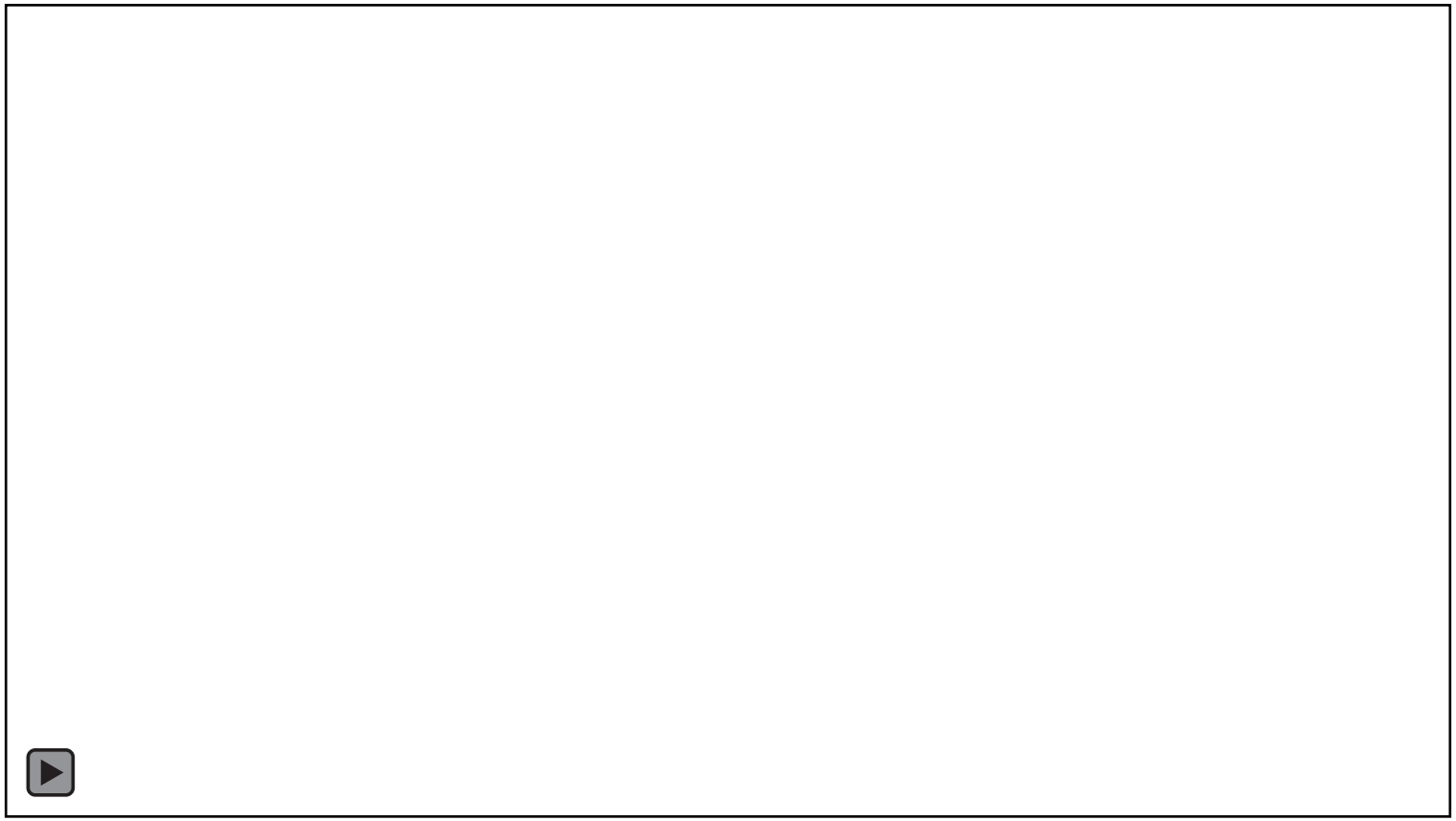
Methods

https://www.mycustomer.com/experience/voice-of-the-customer/20-stats-that-will-change-the-way-you-survey-your-customers

Methods

Methods

Methods



Methods


Everyman Sound Company
Broz Auto Services
Auto parts store
American Barbell Club
Atlas Screen Printing
Screen printing shop
4th St
SE 8th Pl
SE Veitch St
SE 4 St
SE 3rd St
SE 2nd St
SE 10 Pl
SE 10th Ave
SE 1st St
11th Ave
1
2
3
4
5
<Map Legend>
Start and End Point
Path Sequences
Pathways

Methods


Infinity Hall
Continuum
SW Garage
College Manor Apt.
Innovation Hub
Jefferson Apt.
Gainesville Apt.

Results

Intention to Use
Acceptance

https://www.mycustomer.com/experience/voice-of-the-customer/20-stats-that-will-change-the-way-you-survey-your-customers

Perceived Barriers

Results

- No Dropouts due to motion sickness

Results

This information may positively influence

- further marketing and deployment strategies from industry
- making of laws by policy makers specifically toward PWDs
- disseminating educational information by advocacy organizations for PWDs

Results

PwDs compared to Able-bodied Persons

- no statistically significant differences were found between groups, suggesting their perceptions were similar

Discussion

Intention to Use:

- Optimism, perceived ease of use, driver status (inactive), and race/ethnicity (White) were positive predictors of Intention to Use

Perceived Barriers:

- Optimism, perceived ease of use, and race/ethnicity (White) were predictors of Perceived Barriers

Well-being:

- Optimism, perceived ease of use, inactive driver status, and older age were predictors of Well-being

Acceptance:

- Optimism, perceived ease of use, driver status (inactive), marital status (married/domestic partnership), and race/ethnicity (White) were predictors of Acceptance

Discussion

Limitations:

- Routes
- Weather
- Mechanical issues
- COVID
- Sampling

Strengths:

- Research Participants
- Collaborations
- Team science

Results

Safety (n=69)
(+) *"I felt secured. The safety operator did not have to take control over it, the shuttle moved around to avoid the obstacles."*
(-) *"I am not sure if it is perfect yet, if the vehicle was at the very busy traffic like New York or Denver."*

Cost (n=83)
(+) *"No car payment, No insurance payment, No repair."*
(-) *"High cost of maintenance."*

Ease of use (n=105)
(+) *"If I feel tired and don't want to have to focus on driving myself somewhere."*
(-) *"If I'm running late."*

https://www.vectorstock.com/royalty-free-vector/disabled-people-cartoon-handicap-couple-vector-34602578
https://www.istockphoto.com/illustrations/older-people-laughing
https://www.shutterstock.com/search/cartoon-middle-aged-woman

Discussion

Deeply diving into the narrative responses,

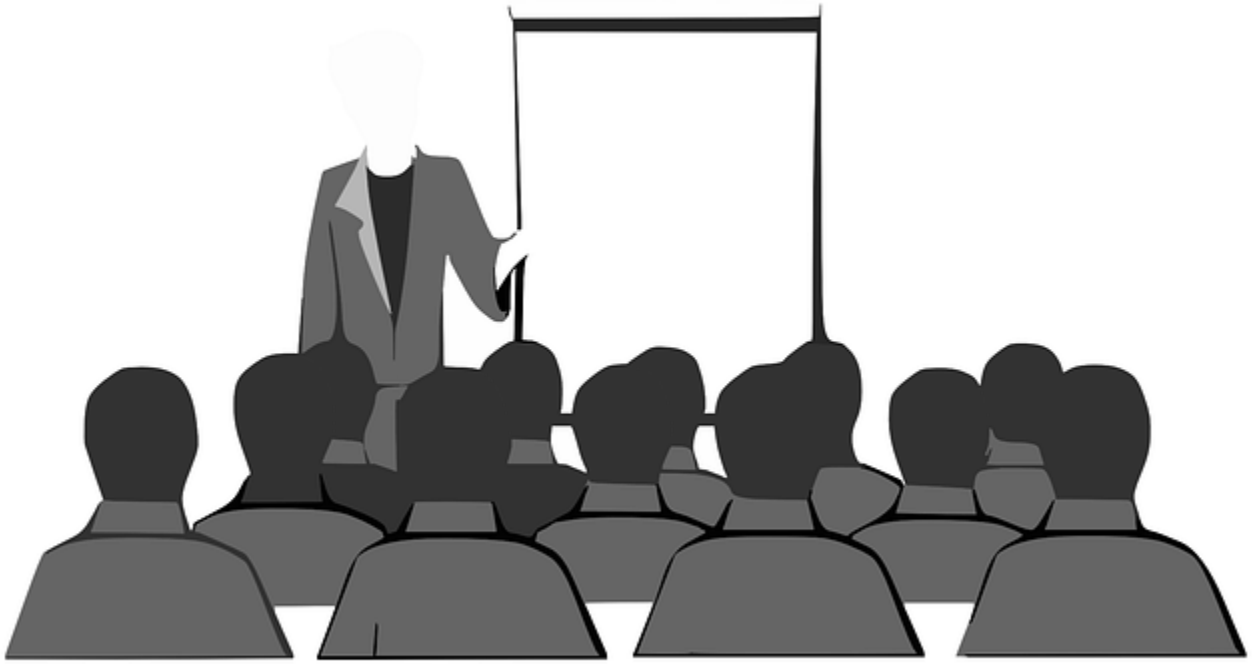
- Both positive and negative responses
- Safety and Ease of Use were the top two themes

Discussion

Discussion

Discussion

Discussion



THANK YOU

Question and Answer

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