Voice in Autonomous Vehicles

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Let’s recap

Speech recognition in the car is traditionally:

1) Motivated by safety (hands-free)
2) Designed by automotive companies

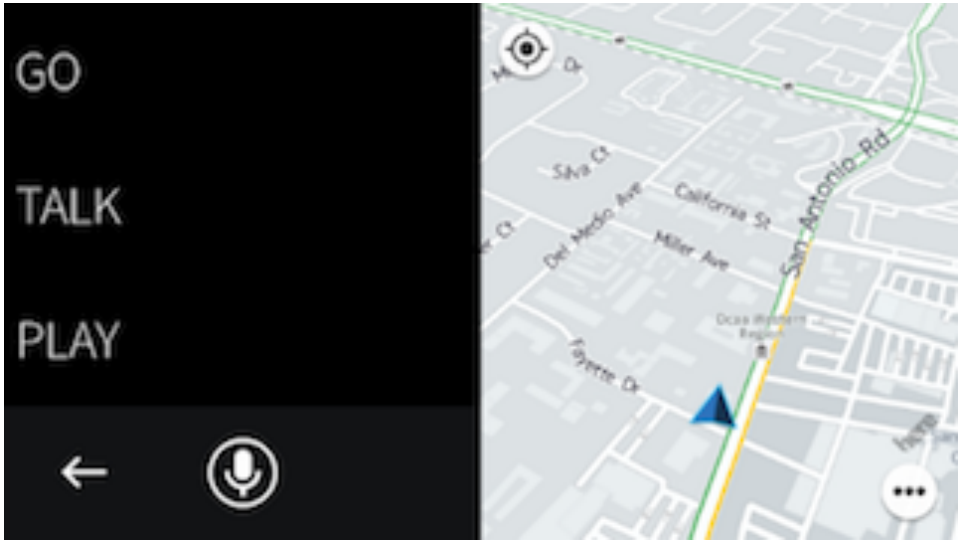
The best in-car designs:

- Keep it simple
- Sync TTS and on-screen text
- Minimize glance time
- Use multimodality

Driver Distraction

Simple is best

- An example of a simple speech interface in the vehicle: JLR justDrive



Human-operated vs. Autonomous

Human-operated	Autonomous
Hands-free	Hands available
Minimize glance time	Eyes available
Short interactions	Length of interaction open

If safety is no longer a concern…

- Driver can use his/her hands to operate a mobile phone
- They can move around the vehicle to operate buttons or touchscreens without using speech

… Is voice technology even required in an autonomous vehicle?

... Why am I giving this talk?

In an autonomous vehicle…

- Communication between “pilot” and vehicle is invaluable
- Voice can be used to switch between modes
- Similar to regular vehicles when out of autonomous mode

Autonomous interior

- Seats further back
- Driver is further from dash
- Large, cross-dash screen may be out of reach
- Driver/pilot may even be facing another direction

Example autonomous interiors

My theory

- Car becomes just another “living space”
- Hands-free will still be desirable, including wake word
- What do people do in the car (now and future)?
  - Eating, drinking
  - Playing with phone
  - Shaving
  - Putting on makeup
  - Interacting physically with other passengers

Autonomous car speech needs

- Ability to access controls without touchscreen
- Notifications and communication with driver
- Hands-free convenience

- And lastly… Safety is still needed when in manual drive mode

Thank You

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