Intelligent and Intuitive Automotive Interfaces

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Nuance: Reinventing the relationship between people and technology

- Defining the next generation of human-computer interaction: **Intelligent Systems**
- Deeply invested in creating effortless and natural user experiences
- Best known for rapidly advancing voice-recognition technology
With leading global relationships, it’s rare to go a day without Nuance
Cloud-based intelligent systems & personal assistant experiences

- Nuance’s next-generation intelligent systems leverage the power of the Nuance Cloud, enabling intelligent personal assistant experiences for a more human conversation with technology.

- The Nuance Cloud supports a broad array of devices, including the connected car.
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Discussion Points
- Current State of the Technology
- NHTSA and Driver Distraction (Cognitive Load)
- NLU + Robust Dialogs
- Voice Only Vs. Voice + Visual
Current State of the Technology
NHTSA & Cognitive Load

• Manual Distraction
  • Hands off the Wheel
• Visual Distraction
  • Eyes off the Road
• Cognitive Distraction
  • Mind not focused on driving task
Reducing Cognitive Load

NLU Has Become Smarter, But is It Enough?

Current State of the Technology

- NHTSA & Cognitive Load
  - Manual Distraction
  - Hands off the Wheel
  - Visual Distraction
  - Eyes of the Road
  - Cognitive Distraction
    - Mind not focused on Driving

“Is there a Starbucks near me?”

“I found two locations, One in downtown Northville and another one on Haggerty Rd. near 8 Mile Rd.”
Speech Interface

- Invocation
- Listening Feedback
- Processing Feedback
- Transcription/Dialog
- Application Help
- Navigation
Invocation

Accessibility is key when defining the method(s) for invoking a speech interface—both from a physical point of view and as regards to user perception. The invocation method needs to be designed with the form-factor of the device, the functionality of the application, and the user’s environment in mind.
Listening and Processing Feedback

Visual and non-verbal audio (NVA) feedback, in addition to dialog, is important for keeping the user informed about the state of the interaction absent other conversational cues (e.g.: facial expressions, gestures, etc.)
Transcription & Dialogue

Offering a visual representation of what the user said, or of an actual dialog between the user and the system, is a way to inform the user that the system accurately understood what was communicated. That said, it’s more critical that the system conveys that it has understood the semantic content of the user’s input.
Help

For natural language applications it is usually impractical to try to convey the functional range of the application, but it is still extremely important, for some users, to receive hints about how to interact with the system. In these cases, whether the help is presented aurally or visually or both, we try to offer examples that prime the user for form as opposed to content.
Navigation

- Transmodal interface indicates navigation mechanics
- Offers user a choice of modalities
- Explicit visual hierarchy is implicit in speech
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Thoughts for further discussion:

– Well-built speech applications are possible today
– What is best:
  – Voice-Only
  – Voice + Visual
  – Voice + Visual “Lite”
Thank You