

Voice Interaction in the Car: From Gadgets to Personal Assistants

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The Fully Networked Car
Geneva, 3-4 March 2010



What drivers have been dreaming of since the 80s:

- Speech recognition, 100% accurate
- Semantic recognition, 100% accurate
- Unrestricted Domain
- Human like Speech Synthesis
- Emotion Detection and Rendering
- Language Independence
- Ubiquitous Personal Assistant



Today's Navigation Implementations and Speech Challenges - TTS

TTS for turn-by-turn directions: a real success has made it into a commodity

- o Really effective in reducing distraction
- o User value: \$20 (or more)



Solved Challenges :

- o Seamless integration of pre-recorded prompts and TTS
- o Compatibility with phonetic maps
- o Mixed Language – phonetic mapping



NAVTEQ



Today's Navigation Implementations and Speech Challenges - ASR

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ASR for voice destination entry:
still a premium feature

- Really effective in reducing distraction ... when it works ;-).
- Multi-step vs. one-shot ?

Solved Challenges :

- Recognition on very large vocabularies
- One-shot VDE (multi-step recognition)



Yet to be solved:

- Match user formulation (PCH vs. Pacific Coastal Highway)
- Language mismatch
- Fight with BOM

Mobile vs. In-car: Implications on Speech

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ASR for voice dialing :
who is the master ?

- Truly eyes-free ?
- Truly hands-free ?
- Designed for in-car use ?
- Data synchronization ?
- Is John Smith the same person as Smith, John ?



Where will navigation be ?

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Next step: Virtual Personal Assistant

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Businessmen need to transform driving time into productive time

- Read e-mails
- Send (vocal) e-mails
- Manage calendar

When true Voice-to-email ?

- Accuracy is key: how to correct while driving ?
- Need server-based processing, connected car essential
- Even so, human correction still needed (what about privacy then...)

SEE HOW iLANE WORKS



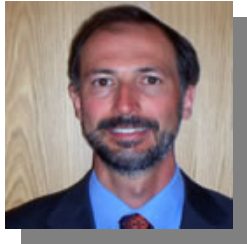
What's next and implications on speech

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- From single, rigid commands (hard to memorize) to flexible formulations
- From sequential, menu-based interactions to single-shot, semantically dense sentences
- ... and hopefully ...
- Standards-based framework for dialogue interaction
- Auto Marketplace for voice-enabled apps ?
- Embedded ASR must be capable of handling Statistical Language Models, extracting semantics and performing multi-step recognition
- Application design must achieve the best trade-off between usability and accuracy
- SCXML, Multimodality, VXML 3.0

Thank You

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