Mobile Voice Computing for ‘Easy Rider’

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Mobile Speech
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Who is ‘Easy Rider’?
Overview of Presentation

- **The Need**
  - Who rides a motorcycle?
  - What types of electronic equipment do they want to use?
  - Why do motorcyclists need a different interface?

- **Some Solutions**
  - Commercial products
  - Research projects

- **How might this effect you?**
  - How to make your application ‘motorcycle friendly’
Who rides a motorcycle?
Who rides a motorcycle? (MIC, 2008)

- 25 million Americans rode a motorcycle in 2008, up 7% from 2003
- Baby boomers outnumber Gen Y riders 2:1 but the latter group grew 62% since 2003
- 25% of riders are women, up 28% from 2003
- Primary reason for riding is recreation but basic transportation is 2nd and short distance touring is 3rd
- Touring riders spend an average of $620 a year on their bike and equipment
Who rides a motorcycle?
What types of electronic equipment do they want to use?
What types of electronic equipment do they want to use?

- Cell phone
- GPS
- Intercom – rider-to-passenger, bike-to-bike
- Recorded music
- Radio
- Text messaging
What types of electronic equipment do they want to use?

According to a 2008 MAIX survey (Mowatt, 2009), drivers using speech to control in-car systems also wanted:

- Traffic information (42.7%)
- Weather information (39.7%)
- Finding a business (37.3%)
- Searching the web for generic information (33.7%)
- Searching the web for location-based services (32.1%)
Why do motorcyclists need a different user interface?
Why do motorcyclists need a different user interface?

- Hands-free – Consequences of one-handed driving in critical situations are severe
- Eyes-free – Change in line of sight necessary to look at a display is significant
- Limited dexterity – Key pads and touch screens are difficult to use with gloves on
- Acoustics – Environmental noise, helmet acoustics
Some Solutions
Commercial Products: Voice output – Limited voice input

- Helmet mounted intercom units interface with Bluetooth equipment, including phones with voice command capability
- Garmin’s Zumo660 motorcycle oriented GPS with voice output and interface for phone with voice command capability
- AT&T Navigator works on AT&T smartphones equipped with GPS. Users can speak the name of more than 10 million businesses
Commercial Products: Voice control headsets

- BlueAnt’s Q1 headset
- Dual microphones for noise cancellation
- Works with up to 8 different Bluetooth devices, e.g., phone, GPS, music
- Uses Sensory’s BlueGenie technology
  - Speaker independent recognition
  - Text-to-speech
  - Hands-free continuous listening
- Unfortunately no helmet mounted version yet
Commercial Products: Integrated into the vehicle

- Users of Ford’s built-in SYNC can access communications and entertainment systems using voice commands:
  - Hands-free calling
  - Turn-by-turn navigation
  - Music search
  - 911 assistance
  - Real-time traffic
  - Audible text messages
  - News, sports, and weather
Research

- Toyota funded study to examine effect of matching car’s voice emotion to that of the driver (Nass, 2005)
- Examination of fatigue caused by voice-alone interfaces (Nishimoto, 2005)
- A persistent interface that provides driver with an intelligent assistant (Reisinger, 2005)
Research: EC ‘MoveOn’ Project
(www.m0ve0n.net)

- EC funded project working on a zero distraction interface for motorcyclists
- Focus is police motorcyclist needs but the results will be applicable to all
- Tasks include:
  - Creation of a speech corpora in 3 languages
  - Creation of a noise database
  - Design of a communications and head nods-enabled helmet
Ways to make your application ‘motorcycle friendly’

- Use a recognizer trained to handle noisy environments
- Never require touch-tones or assume they are the preferred alternative when recognition is poor
- Be sensitive to the user’s environment and activity when writing prompts and grammars
- Match the VUI to the user’s behavior
- Use what you know about the caller
- Test your application in a wide variety of environments
- Make sure your voice commands work through a Bluetooth type interface
Summary

- There are a lot of motorcyclists out there and they may want to use your application while on the road
- Products that are voice-enabled are easier to use and often preferred
- Making your application ‘motorcycle friendly’ often means making it better for all users
Thank you

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References