Highlights of MATCH Research at Edinburgh

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Designing Voice Interfaces

For what do we use voice?

    Giving commands

    Providing information

    Providing reminders

    …

Is voice a good modality?

How does it work?

Some uses of Speech

- Give commands
  - Tell television to change channel
  - Tell door to close
- Provide information
  - Talking devices (alarm clock, scales …)
  - Verbal summaries of e.g. next bus departures
  - Status messages
- Provide reminders
  - Medication
  - Appointments
  - Time of Day

MATCH: Speech Input

- With age, vocal tract physiology changes, so older voices more difficult to understand - more pronounced as they get older

- Older people use different phrases & vocabulary

- Specialised adaptation required
  - Acoustic model
  - Language model

MATCH: Managing Interaction

- Study of older people interacting with a simulated appointment scheduling system

- Older people can cope with many options, if all they need to do is spot the right one

- Most older people try to chat, even if the system itself is not chatty at all

  -> require far more flexibility & robustness than possible with current technology

MATCH: Speech Output

- Principle: Make signal as robust as possible
- How?
  - Be redundant
  - Highlight important information (emphasis, pausing)
  - Use familiar words and phrases
  - Link with context

Advantages of Speech

- Natural
- Useful if vision or reading problems
- Can be explicit

Disadvantages of Speech

- Speech input highly error prone
- Speech output can
  - Be difficult to understand
    (background noise / hearing problems)
  - Contain too much information
  - Use annoying voice
  - Scare people
- Speech interaction can be
  - Mechanistic, not chatty
  - Inflexible

Over to you!

- Experiences?
- Comments?
- Suggestions?

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