

Research Questions and Methods

All examples found in CHI 2019

Brainstorm / Critique exercise

- Present a real research question, brainstorm methods to evaluate
 - Judge strengths/weaknesses of each method
 - Show what the researchers actually did, try to understand why
 - Determine whether the method matched the research question
 - Should the method be changed?
 - Should the research question be changed?
- There are multiple ways...
 - Different methods can frequently capture different facets of the same question
- Purpose
 - Learn how to pick methods given a research question, grounded in real, published research

Examples

Research question:

How are ride-sharing drivers impacted by government regulations in Taiwan?

Examples

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How are ride-sharing drivers impacted by government regulations in Taiwan?

Method:

- 19 semi-structured interviews of current drivers, snowball sampling
- Drawbacks:
 - Sample does not include drivers who quit because of regulations
 - Other issues with snowball sampling?

Examples

Research question:

If you were to try to design a system with a tracked multi-touch tablet and midair, bare-handed gestures in virtual reality, how might you figure out a good design?

- Tablet and hands are both tracked in 3 dimensions
- Task is 3D modeling

Examples

Research question:

If you were to try to design a system with a tracked multi-touch tablet and midair, bare-handed gestures in virtual reality, how might you figure out a good design?

Method:

- Formative study: participants imagine (role-play) how they would use a multi-touch tablet and midair gestures in a 3D environment to do a 3d modeling task
- Evaluation: after building the system, they ran another study with the system (the users performed a specific 3d modeling task) and had the participants fill out a questionnaire and give some freeform response



Examples

Research question:

How do we help people with visual impairments navigate an airport?

- People who typically need aid to get around (white cane / guide dog)

Examples

Research question:

How do we help people with visual impairments navigate an airport?

Method:

- Focus groups: visually impaired participants discuss with each other the challenges of airport travel
 - No independence, reliance on assistance
 - Between/after assistance challenges
 - Environmental challenges: large crowds, open areas, carrying luggage
 - Coping with issues: stay near help desks, wander aimlessly to draw attention if they need help
 - Difficulties knowing about gate changes or delays

Examples

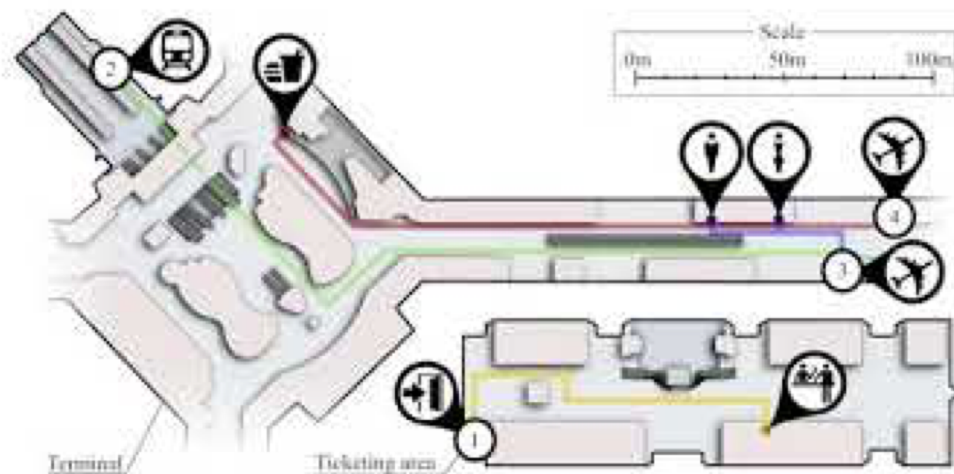
Research question:

How do we help people with visual impairments navigate an airport?

Method:

- Focus groups: visually impaired participants discuss with each other the challenges of airport travel
- After adapting an existing GPS system, real-world study:
 - Have predefined routes that participants would be likely to use
 - Require participants to use these routes with the system assisting them
 - After each route, give participants a questionnaire for confidence, usability, etc.
 - Post-interview after all routes about effectiveness, challenges, suggestions, etc.

We installed an accurate indoor navigation system, NavCog, at the Pittsburgh International Airport, and performed a user study where people with visual impairments traveled routes relevant for their airport experience.



Examples

Research question:

What is compelling about Facebook's news feed?

Examples

Research question:

What is compelling about Facebook's news feed?

Method:

- Experiment: participants use facebook
 - Participants access own facebook account
 - Browse for 10-15 mins, quit whenever they feel like it (past 10 mins)
 - Only allowed to read, like, share; can open links but need to go directly back to feed
 - Afterward, participants were asked:
 - To recall every thread they saw
 - Match recalled threads to recording (including order)
 - Rate how positive/negative their experience was for each thread, regardless of recall

There was a video, but it was super long and it's pretty easy to imagine what this looked like.

Examples

Research question:

Given a few interior office-like layouts in a self-driving car, how do they affect people's ability to work?

Examples

Research question:

Given a few interior office-like layouts in a self-driving car, how do they affect people's ability to work?

Method:

- Put participants in a driving simulator, hook them up with an EEG
- Have them perform concentration tasks (from psychological research)
- Give questionnaire, analyze data from concentration tasks, check EEG readings

