Beyond Omakase: Designing Shared Control for Navigation Robots with Blind People

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AUTONOMOUS NAVIGATION ROBOTS FOR THE BLIND

📍 **Are users really in control?**
Often limited to following the robot's decisions

📍 **The *omakase* interaction**
"I'll leave it up to you" in a decision-making model
(Slingsby, 2004)

Social navigation challenges

E.g., "Freezing robot problem"
(Mavrogiannis et al., 2023)

MODES OF AUTONOMY

Omakase Mode
Passively following the robot

Boss Mode
Actively commanding the robot's movements

Independence:
Control, Choice, and Power
(Rock, 1988)

Monitor Mode
Requesting spatial information from the robot

STUDY OVERVIEW

1. Preliminary Interviews (N=14)

Understanding blind people's **social navigation** challenges & strategies

Identified key crowd situations

AI Suitcase
(Asakawa, 2024)

2. Navigation Tasks & Post-Session Interviews (N=13)

Exploring blind people's preferences across different modes of autonomy in crowd situations

Navigated key crowd situations

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FINDINGS

ACTIVE USER INVOLVEMENT

Taking the lead in engaging with the crowd

[Stationary crowd situations]

Boss ← **Monitor** → Omakase

89% 11%

Inquiry or alert to bystanders:
Mostly initiated by the user
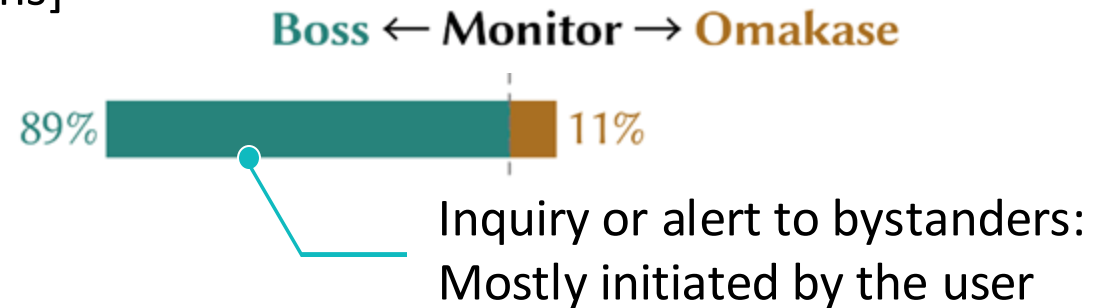
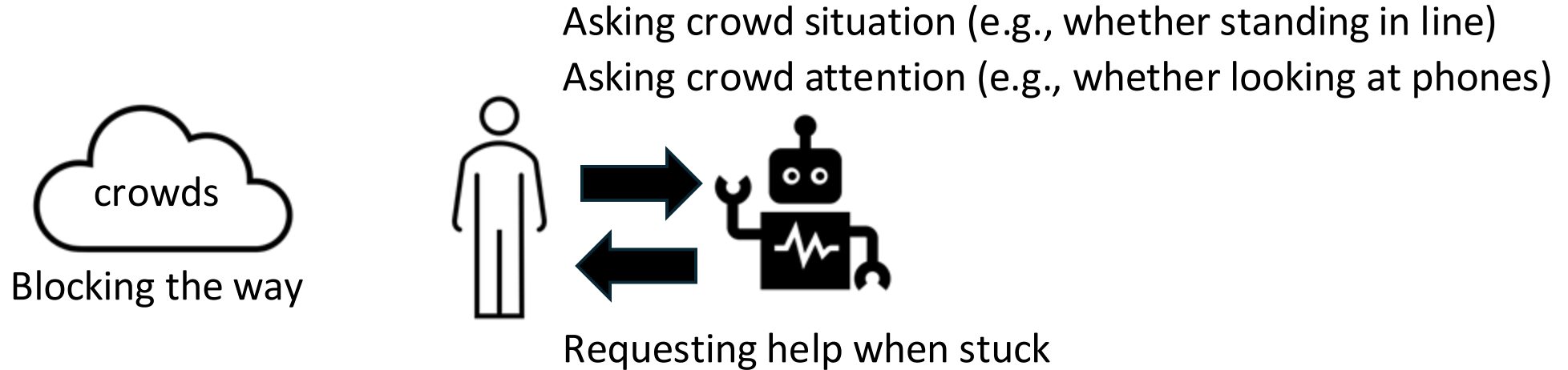💬 *"…Unless there's a sense of urgency, I don't feel I have the right to assert myself that much."* - P10

💬 *"People might start thinking that blind people can't do anything on their own."* - P4

DIALOGUE WITH THE ROBOT

Building mutual support in complex navigation

Asking crowd situation (e.g., whether standing in line)
Asking crowd attention (e.g., whether looking at phones)

crowds

Blocking the way

Requesting help when stuck

💬 *"If the robot said something like, 'It's a little difficult to pass through right now,' the user might respond, 'Oh, I need to help [the robot].'"* - P5

TAKEAWAYS

Users are co-navigators, not passive recipients

Interaction modes (e.g., Boss and Monitor) help users retain agency

Adaptive control strategies that balance user and robot roles

"When people understand what's happening… walking isn't just walking anymore — it becomes something more enjoyable." - P7

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