



Using location awareness in mobile interfaces to propel collaboration

case studies and research methodologies

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outline

- A brief introduction to LA and LBSs
- LA and coordination: CatchBob!
- LA and messaging: DeDe
- LA and shared annotation: GeoNotes
- Some MID research methods

LBSs

- Space navigation (spatial annotations)
- Object tracking
- Mobile learning
- Entertainment (ubiquitous games)
- Serendipity prompting

space navigation(I)



space navigation(2)

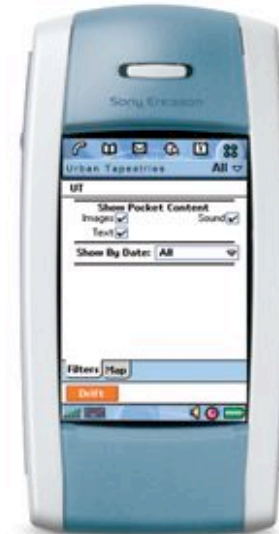
Login



Drifting



Early Filters



Selecting Content



Entering Content



Zoomed Out View



object tracking



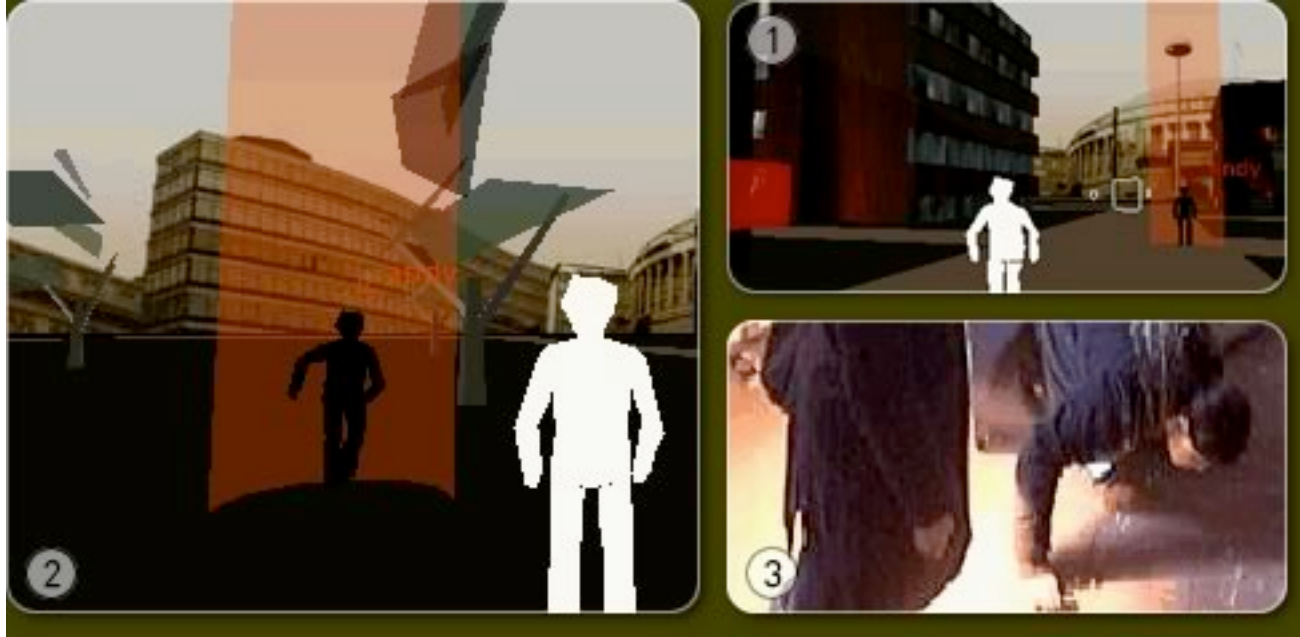
Can You See Me Now? & Uncle Roy All Around You (Blast Theory)

mobile learning

frequency 1550



entertainment

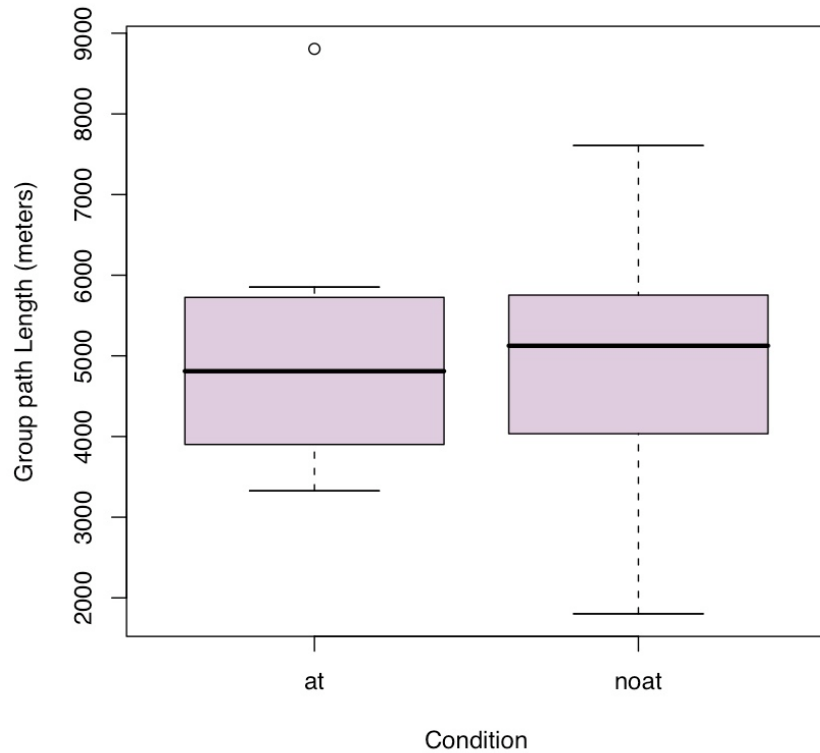


Uncle Roy, All round you

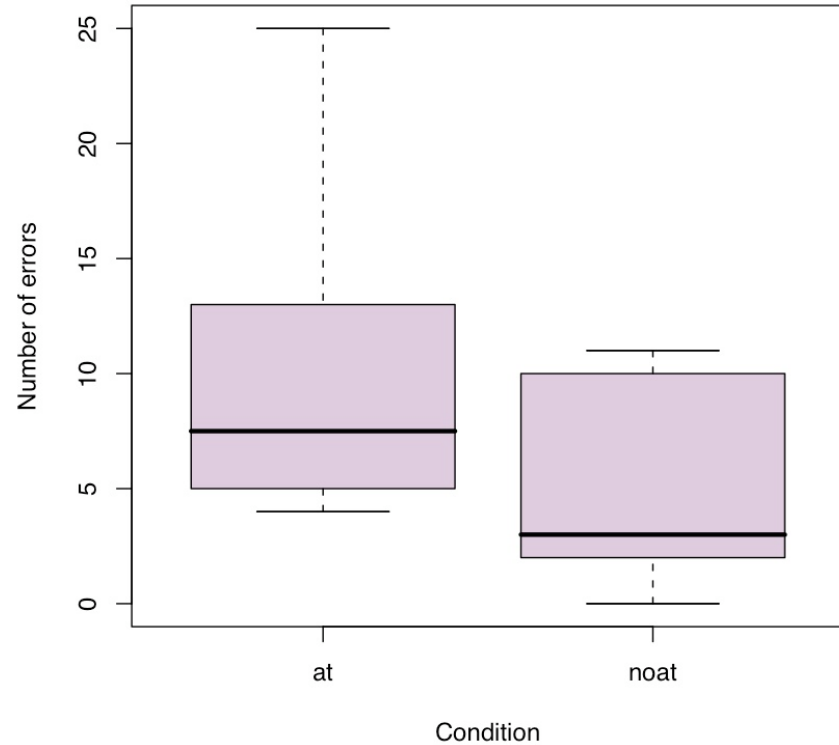
CatchBob!

- Goal: understanding how a location awareness tool might impact collaboration and mutual modeling specifically.
- Field experiment using a mobile game: CatchBob! (Girardin and Nova), spatial coordination task
- 2 conditions: with or without others' positions
- 10 teams of 3 in each conditions (60 users)
- Among a team: people knew each other + knew the campus
- Procedure: planning, game, questionnaire, group replay

Results(1): performance and mutual modeling

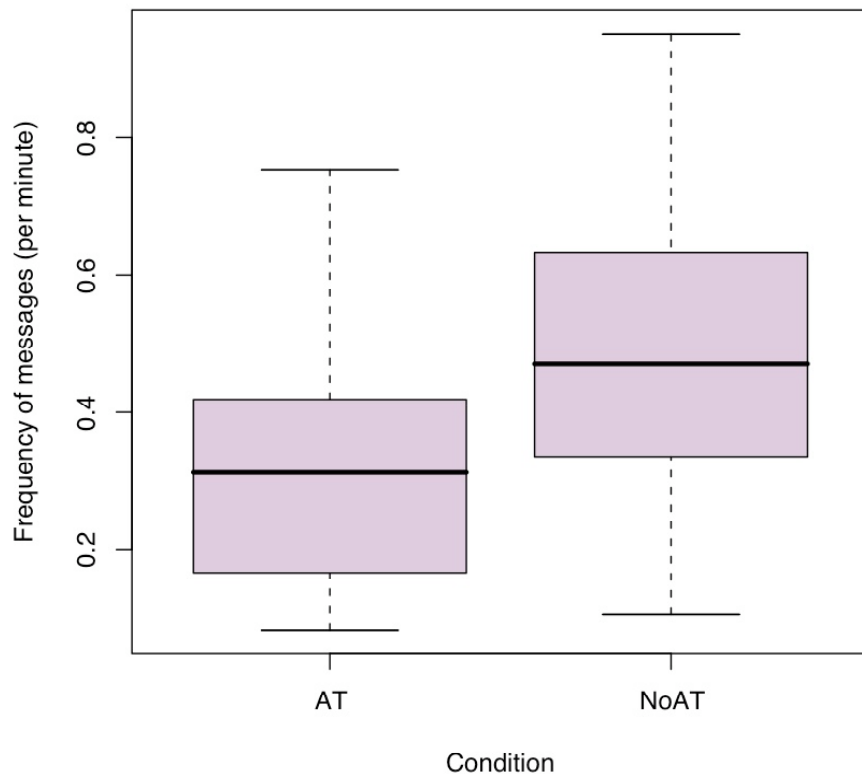


No significant difference



Significant difference ($p < 0.02$)
Intraclass correlation: $r = 0.39$,
significant ($p = 0.01$)

Results (2): communication



- More messages when not given the location of the partner
- More messages about position AND direction, strategy
- Pragmatics: more questions when not given the partners' location.

significant difference ($p < 0.01$)

conclusions

- In this context, automatically knowing where the others are did not facilitate task performance
- AND it did not facilitate the representation of the others' path in space.
- Players without the tool took better advantage of the annotation feature: picked up **relevant** facts.

random thought

‘Location is not enough’:

Automatic location-awareness = information

Self-declared positioning = information +
communication of an intention

DeDe

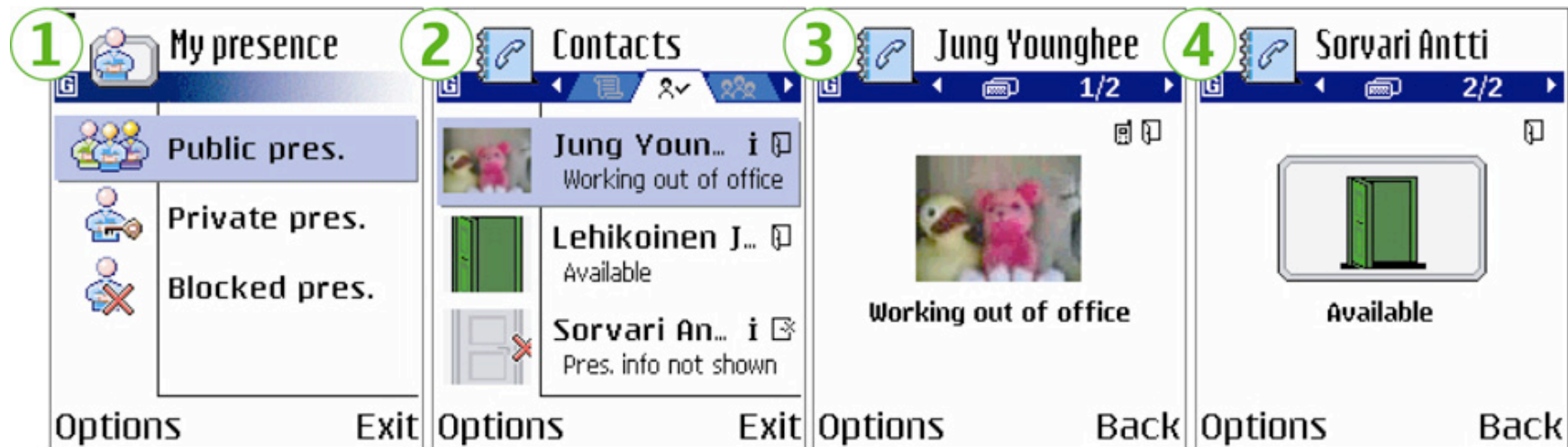
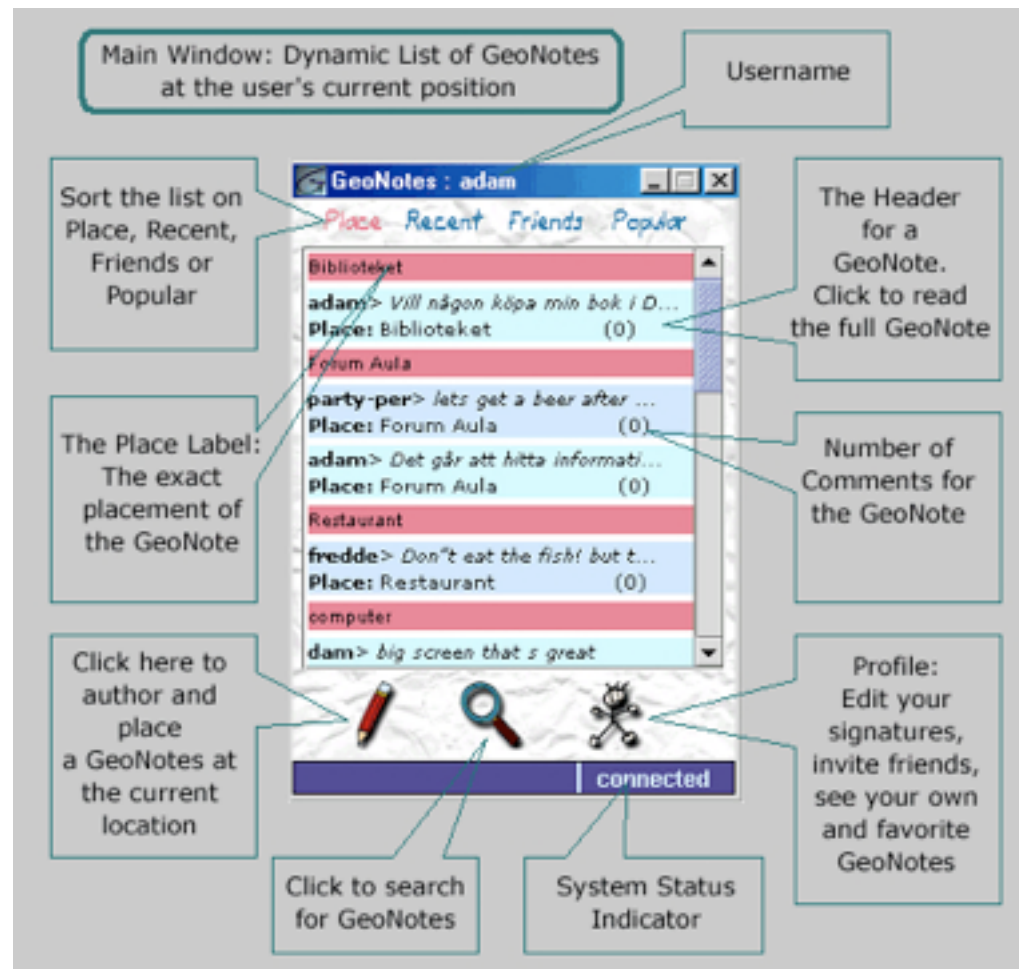


Figure 1. Screenshots of Nokia Presence application and Presence-enhanced Contacts. User-definable Presence information is published in (1). A separate list in the Contacts application shows the status of users subscribed to Presence service (2-4).

results

- DeDe system was used only when the user could predict in advance the context of delivery basing the inference on the knowledge of the receiver schedule and movements in the city.
- Otherwise, the main concern expressed was on the reliability of the delivery of the messages.

GeoNotes



GeoNotes is a location aware community system, similar to graffiti, post-id notes, toilet scribble, public notes boards and posters.

design rationale

- - endorsing an open information space. Allowing users to direct notes to certain users was discarded. The aim is not for personal messaging system but rather a publishing system, tapping into metaphors of public note boards and newsgroups, rather than e-mail. Not possible to read/write notes from remote position, the connection between the note and its spatial context would be endangered.
- - GeoNotes allowed a broad range of play with identity and anonymity
- - Comment could only be read and authored from inside the note, ensuring the right context for the comment. Multiple comments were displayed in temporal order, similar to chat and virtual community systems.
- - Without a verbal description of the position, the note would still be incomprehensible to its readers. GeoNotes users were free to define the position. This place-label system allowed authors to be quite creative in connecting notes with space, potentially giving another motivation for authoring.

method

- - 400 potential users (engineering students) with semi-mobile terminals (W-LAN enabled laptops)
- - Each access point in the network acted as a GeoNotes location
- - Encourage students to download, install and use GeoNotes by arranging an evening reception at the commencement of the test period
- - 2 type of data collected: usage of the system (time clients were connected, sorting, searching, notes read, number of friends) and all the notes, comments, signatures and place label of the system.
- - Most popular places seemed to be lecture rooms, corridors, lab-rooms and library.

Results

- - The results of this study have implications on how location-aware community systems should be designed in the future.
- - Location-based chat with acquaintances and strangers emerged as an important motivator, indicating the need to support meaningful comment and threaded discussions, in addition to anonymous signatures. Some form of place label system is indispensable since it performs a number of functions.
- - Rooms seemed to be more important than buildings and objects

mobile phone talk

- Enhancing phone talk with an automatic detection of availability of the caller does not always work
- Appropriateness of a conversation is constantly negotiated between the peers.

summary

- Adding extra features like LA to a service does not mean necessarily a better performance / usage of it by the user.
- Location Awareness impacts on context definition and mutual modeling
- Therefore we need to study the impact of these new features on collaborative processes

research methods

- case studies
- ethnography
- field study (observational)
- interviewing
- laboratory experiments
- technology probes

case studies

- high-level review of the design implementation or usage of a product or situation to evaluate it and inform future processes

ethnography

- Longer-term studies where an observer takes notes while having minimal impact on the situation under study.

field study (observational)

- A broad class of methods which occur in the participants' environment and tend to be short term studies.

Laboratory experiments

- Testing of an interface in an artificial controlled environment

Technology probes

- Uses a prototype technology with limited open-ended usage possibilities, used in - context for long periods which record how it is used.

cheap thought

- depending the particular effect we target we need to use a different technique, in other words some effects may not appear in a controlled environment.
- an opposition of different methods may offer the best results.

references

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