

Preliminary Investigations About Interruptibility of Smartphone Users at Specific Place Types

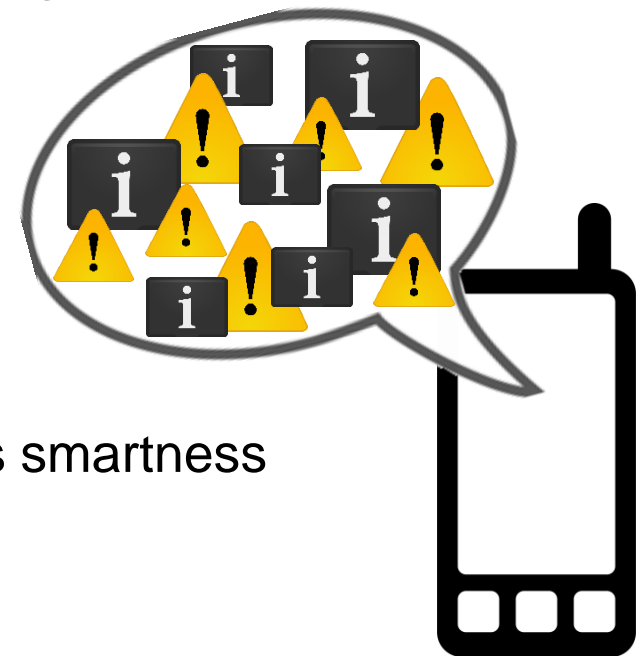
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Motivation

- Smartphones are supposed to support us in everyday life
- But they happen to be a burden
- We drown in a flood of smartphone notifications
- Resulting in, e.g:
 - Distraction
 - Loss of focus
 - Hyperactivity
 - Digital burnout
- Growing need for the smartphone to prove its smartness
 - Detect user needs
 - Manage smartphone notifications
 - Reduce negative effects



Idea

- Investigation of relations between place types and interruptibility
- Related Work considered as location
 - Pejovic et al. (“InterruptMe”) [1]
 - Descriptive, self-reported location ("residential", "work", "public")
 - GPS, Bluetooth fingerprint and WiFi fingerprint changes
 - Ter Hofte [2]
 - Self-reported location
- Drawbacks of self-reported locations
 - Might not be generalizable
 - Might underly recall bias
 - Very subjective
- Proposed solution:
 - Place types out of a fixed, generalized set → Google Places API



Preliminary Steps

■ Categories:

- To make place types more generalizable and to allow abstractions
- Based on Zheng et al. [14] and considering [3,4] we propose:
 - Food & Drinks
 - Sports & Exercises
 - Movies & Shows
 - Shopping
 - Recreation & Amusement
 - Work and Education



■ Reduction of place types:

- Google Places API consists of >120 place types → too many for a survey
- We asked 10 people which places they visit at least once per month
- We kept all that were named at least 4 times

Survey

■ Design:

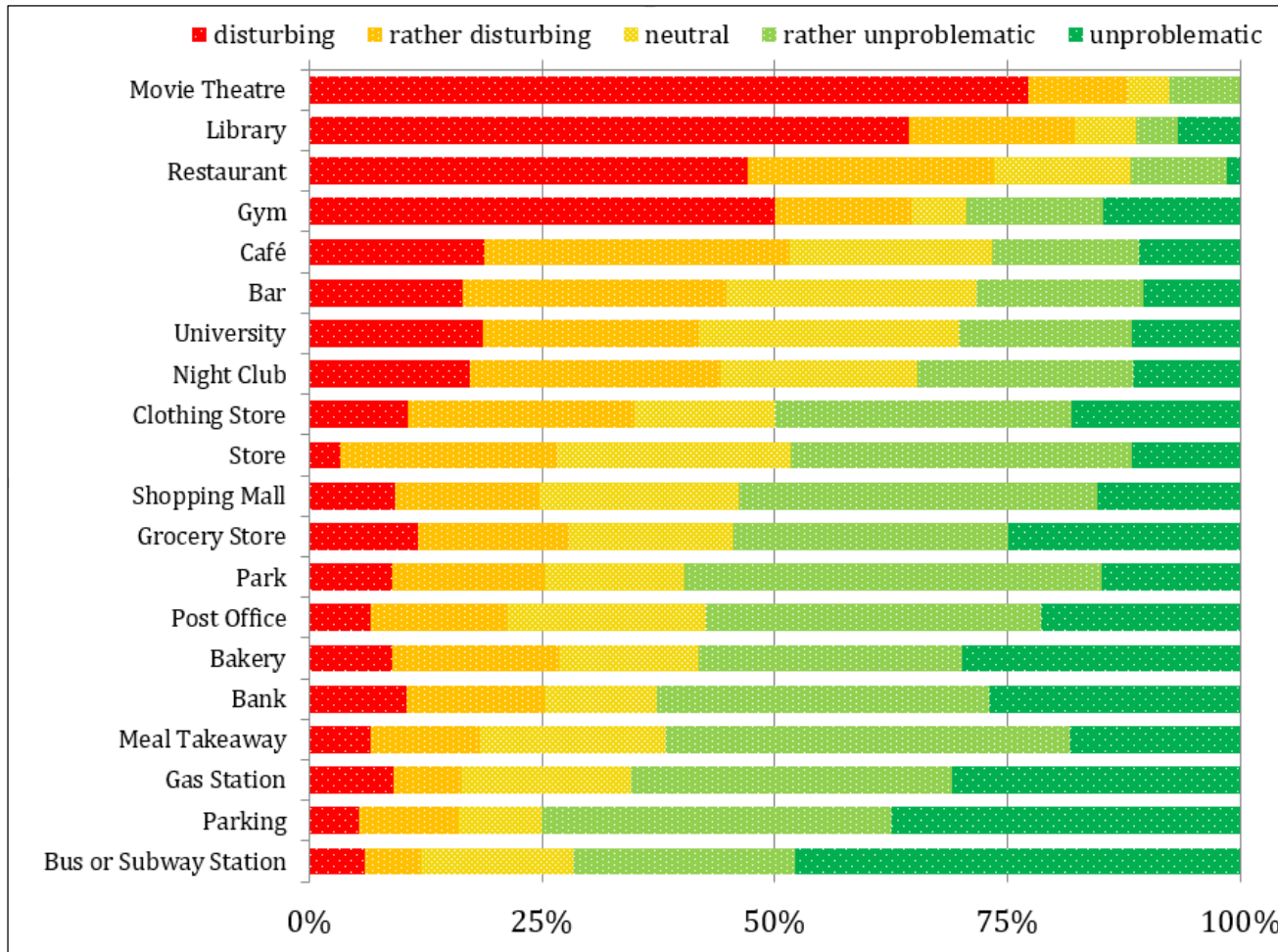
- Online survey (Google Forms) distributed via social networks
- Two questions per place type
 - "In which category would you assign the currently displayed place type?"
→ select categories using checkboxes
 - "At the displayed place type, how interruptive are smartphone notifications?"
→ rate on a likert scale ranging from "disturbing" (1) to "unproblematic" (5)

■ Subjects:

- 68 subjects
- 50% female, 50% male
- Age: 33 years \pm 12 years
- The largest occupational category was information and communication technology



Interruptibility Per Place Type & Category

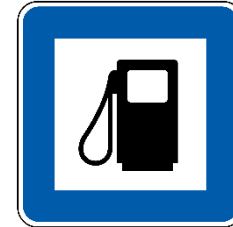
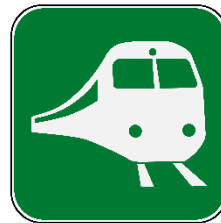


Place Type	Likelihood
Shopping	60.9 %
Work & Education	51.4 %
Food & Drink	48.9 %
Recreation & Amusement	44.2 %
Sports & Exercise	41.7 %
Movie & Shows	15.3 %

Findings + Conclusion

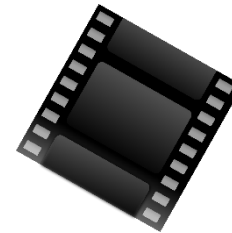
- Participants are rather interruptible at places where they have to wait

- Bus / train stations
- Parking lots
- Gas stations
- Meal takeaways



- Participants do not want to be interrupted at silence areas or at places with expected social interaction

- Library
- Cinema
- Restaurants



- Results appear trivial to us, but they are detectable by smartphones → automatic assessment instead of self-reports (generalizability, reliability)
- Categories allow easy integration of new place types

Outlook

- Further context information should be considered in combination with place types:
 - Physical activity
 - Social activity
 - Information about the notification itself
 - Origin / app
 - Social relation / sender
 - Design of the notification / notification type

- Further info:
 - Anja Exler et al: Smartphone-Based Detection of Location Changes Using WiFi Data. MobiHealth'16. To appear.
 - Anja Exler et al: Towards A Smartphone-Based Method To Estimate If A User Is In Company Or Alone Based On Place, Time, And Basic Physical Activity. MobiCase'16. To appear.
 - www.teco.edu/people/exler

References

1. Veljko Pejovic and Mirco Musolesi. 2014. InterruptMe: Designing Intelligent Prompting Mechanisms for Pervasive Applications. UbiComp '14 (2014).
2. G Henri Ter Hofte. 2007. Xensible interruptions from your mobile phone. In MobileHCI '07.