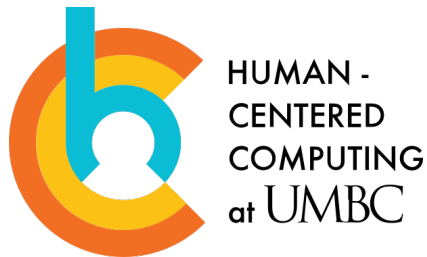




Informing the Design of Privacy Awareness Mechanisms in Smart Homes from Users' and Bystanders' Perspectives

Parth Thakkar, Danny Y. Huang, Yaxing Yao

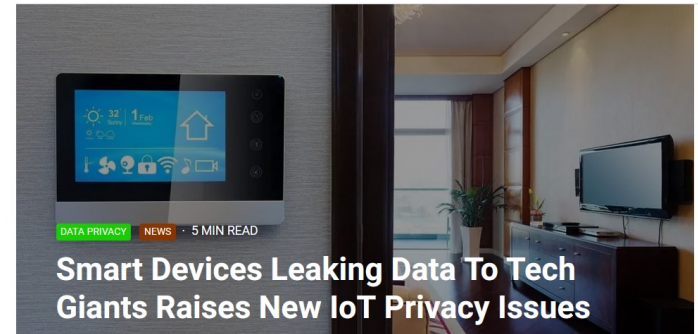




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Connected Devices Share More Data Than Needed, Study Says

Smart speakers and streaming sticks are among the household gadgets transmitting information to advertising companies and other third parties



Smart Devices Leaking Data To Tech Giants Raises New IoT Privacy Issues

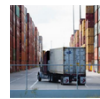
DATA PRIVACY NEWS 5 MIN READ

MARKETS

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▼ DOW	35,132.97	-39.02	-0.11%
▼ S&P 500	4,512.96	-9.25	-0.20%
▼ NASDAQ	14,239.23	-24.19	-0.17%

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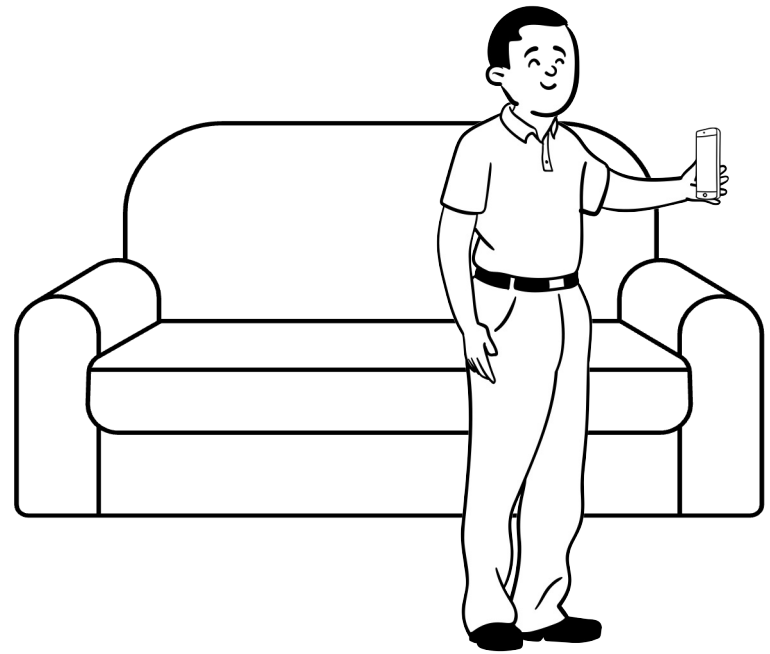


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Bystanders



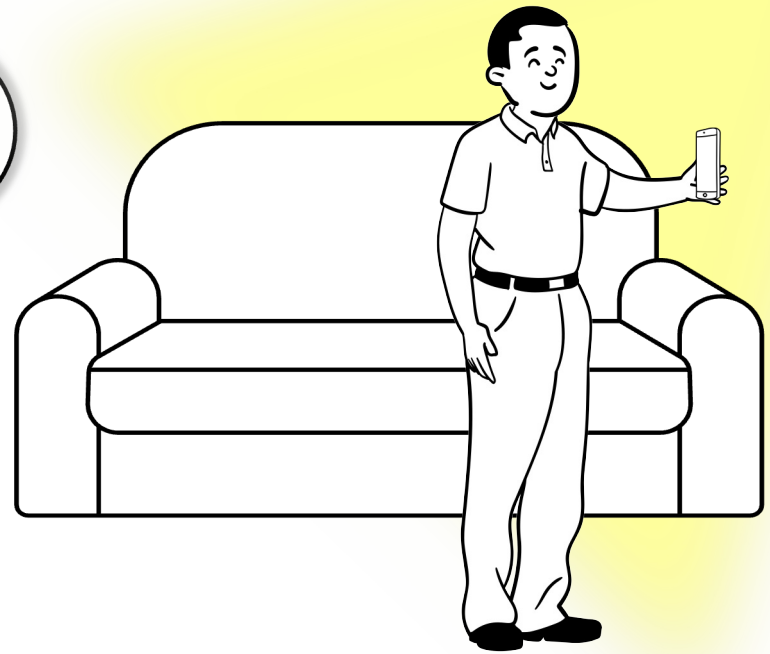
User



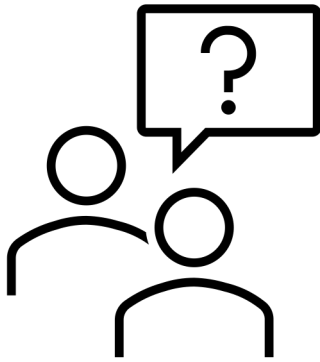
Bystanders



User



What We Don't Know?



- What factors influence users' and bystanders' preferences of receiving privacy notifications in smart homes?
- Which modality do users and bystanders prefer to receive privacy notifications in smart homes?
- How do the preferences differ between users and bystanders in smart homes?

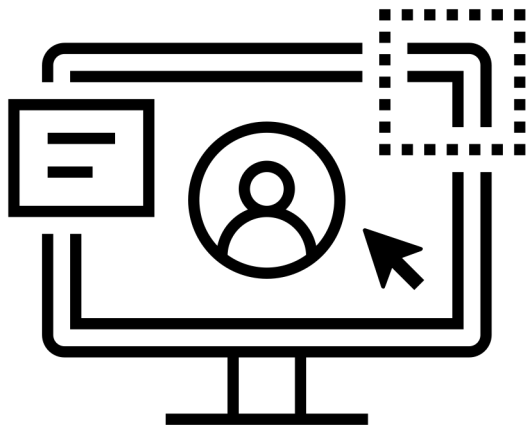
What Did We Do?



- Survey: 136 Users, 123 Bystanders (18 to 54 years old)
- Gender: 31 % Male, 65% Female, 4% Non-binary

(“It would probably turn into a social faux-pas”: Users’ and Bystanders’ Preferences of Privacy Awareness Mechanisms in Smart Homes, CHI’22)

What Did We Find?



- Perceived benefits and drawbacks for four privacy awareness **mechanisms**
- Comparisons between users and bystanders for notification preferences in four **scenarios**



Privacy Dashboard

(U): Users, (B): Bystanders, (U&B): Users and Bystanders



Benefits

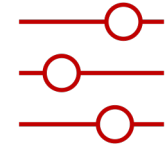


Provides detailed information *(U&B)*



Centralized source of information *(B)*

Drawbacks



Lack of control *(U&B)*



Violates social norms *(B)*

Data App



(U): Users, (B): Bystanders, (U&B): Users and Bystanders

Benefits



Accessible from private devices *(U&B)*



Provides detailed information *(U&B)*

Drawbacks



Has security concerns *(U)*



Invades user privacy *(B)*

Ambient Light (Demo)

(U): Users, (B): Bystanders, (U&B): Users and Bystanders



Encrypted traffic



Regular traffic



Tracking traffic

Benefits

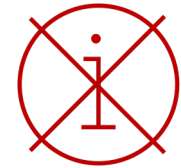


Easy to understand (U&B)



Unobtrusive notifications (U&B)

Drawbacks



Not informative (U&B)



Psychological burden (B)



Ambient Light

(U): Users, (B): Bystanders, (U&B): Users and Bystanders



Encrypted traffic



Regular traffic



Tracking traffic

Benefits

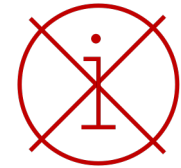


Easy to understand (U&B)



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Psychological burden (B)

Privacy Speaker (Demo)

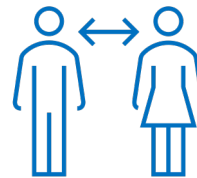
(U): Users, (B): Bystanders, (U&B): Users and Bystanders



Benefits

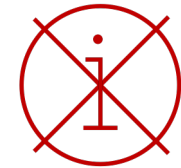


Is effortless (U&B)



Reduces social confrontations (B)

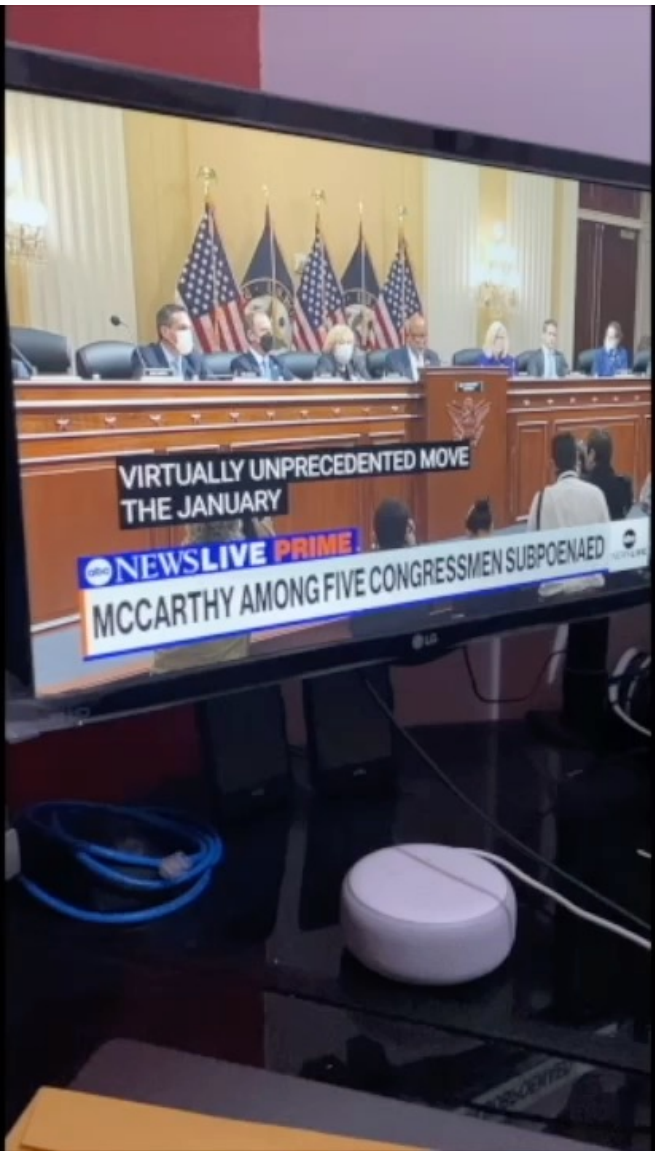
Drawbacks



Not informative (U&B)



Annoying and intimidating (U&B)



VIRTUALLY UNPRECEDENTED MOVE
THE JANUARY

NEWSLIVE PRIME
MCCARTHY AMONG FIVE CONGRESSMEN SUBPOENAED

Privacy Speaker ([Demo](#))

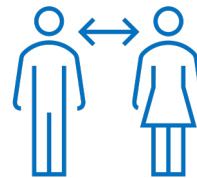
(U): Users, (B): Bystanders, (U&B): Users and Bystanders



Benefits



Is effortless (U&B)



Reduces social confrontations (B)

Drawbacks



Not informative (U&B)



Annoying and intimidating (U&B)

Comparing Users' & Bystanders'



Users tend to prioritize **device utility** over privacy protection



Bystanders tend to consider **social factors** such as social relationship and power dynamics.

How Do We Move Forward?



Easy and Equal Access



Unobtrusive Modality



Privacy Notice at
Smart Home Level



Privacy Choices Along
with Privacy Notice



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Have questions? Email us at:
✉ yaxingyao@umbc.edu

