Personalized Privacy Assistant:
Understanding Impact on Privacy Decision Making

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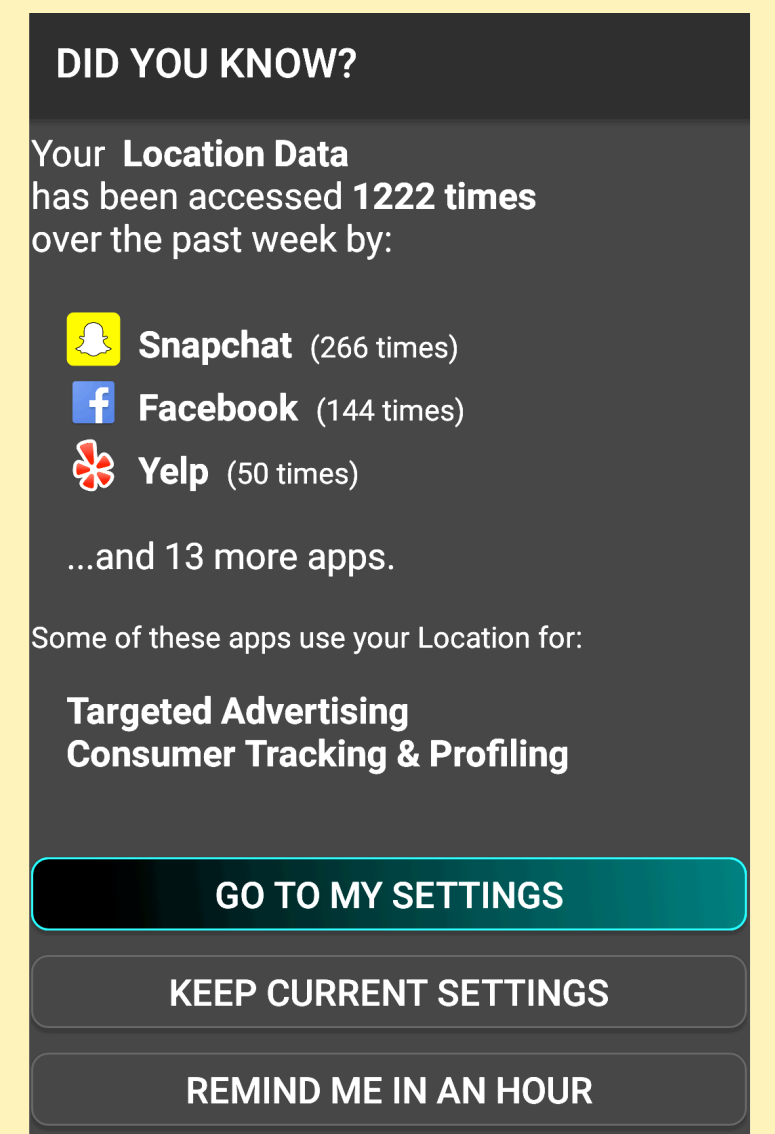
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Motivations

- Smartphone users need app privacy controls
- The number of permissions for mobile apps is so **overwhelming** that many users are unable to adequately manage their permission settings.
- Users have **diverse** privacy preferences.
- A personalized privacy assistant (PPA) can **recommend app permission settings** based on individual preferences.

Data Collection

- Field study (n=84) to collect permission settings.
- Modified Android permission manager to show access frequency and potential purposes for permissions.
- Motivated users to review and adjust their permission settings via privacy nudges.

DID YOU KNOW?
Your **Location Data** has been accessed **1222 times** over the past week by:

- Snapchat (266 times)
- Facebook (144 times)
- Yelp (50 times)

...and 13 more apps.

Some of these apps use your Location for:
Targeted Advertising
Consumer Tracking & Profiling

GO TO MY SETTINGS
KEEP CURRENT SETTINGS
REMIND ME IN AN HOUR

Privacy Profiles

- Users' privacy preferences expressed as a 3-dimensional tensor of aggregated preferences (app category, permission, purpose).
- Applied weighted PARAFAC Tensor factorization to impute the tensor using known data.
- Generated the profiles using hierarchical clustering (K=7, Complete Linkage, Cosine distance)
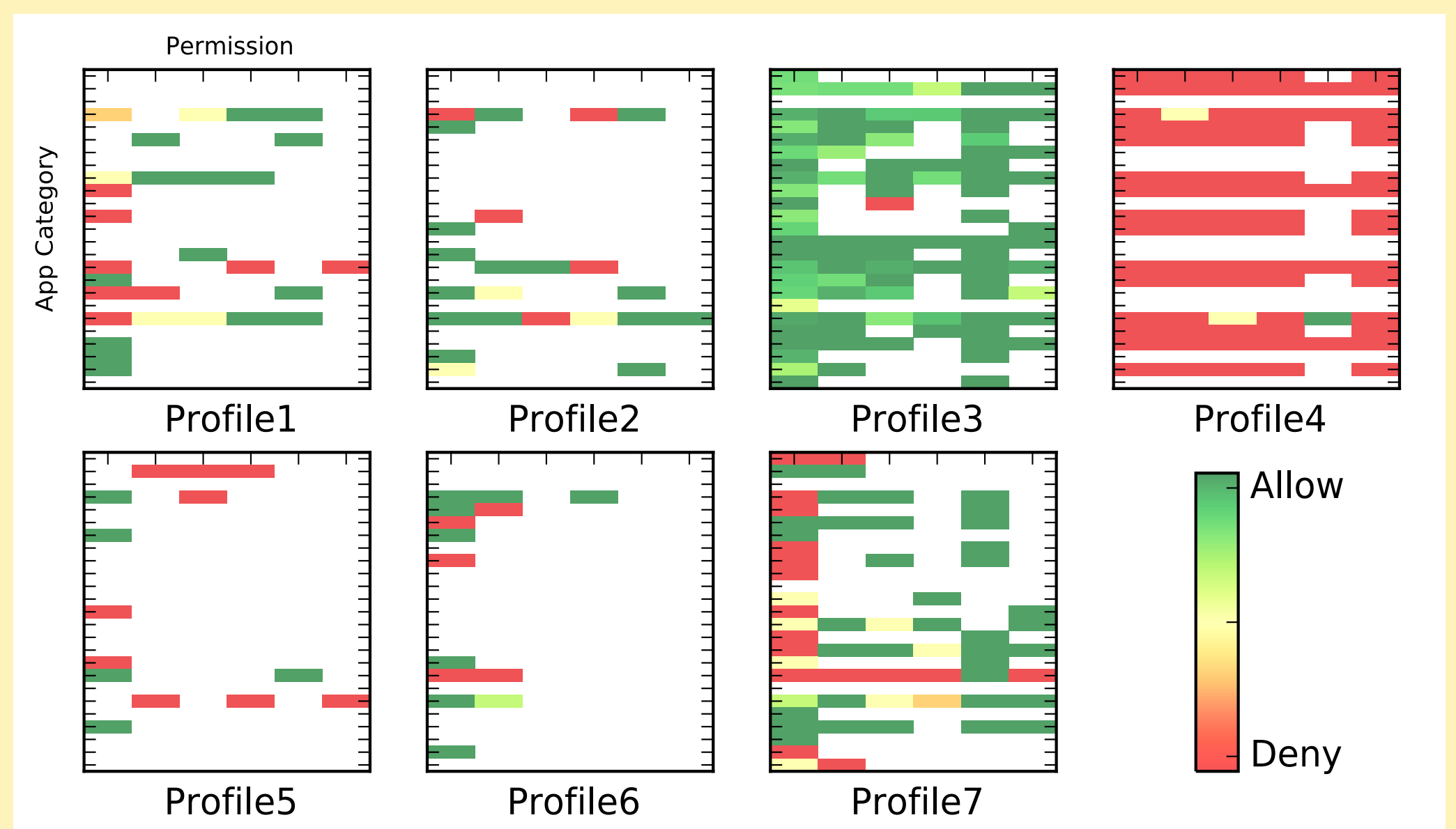
Profile Assignment and Field Study

- Users answered 3-5 questions based on installed apps to determine the most fitting privacy profile.
- Second field study (n=72) found that **78.7%** of the recommendations were accepted and only modified **5.1%** of the recommendations were modified after further interaction with PPA.
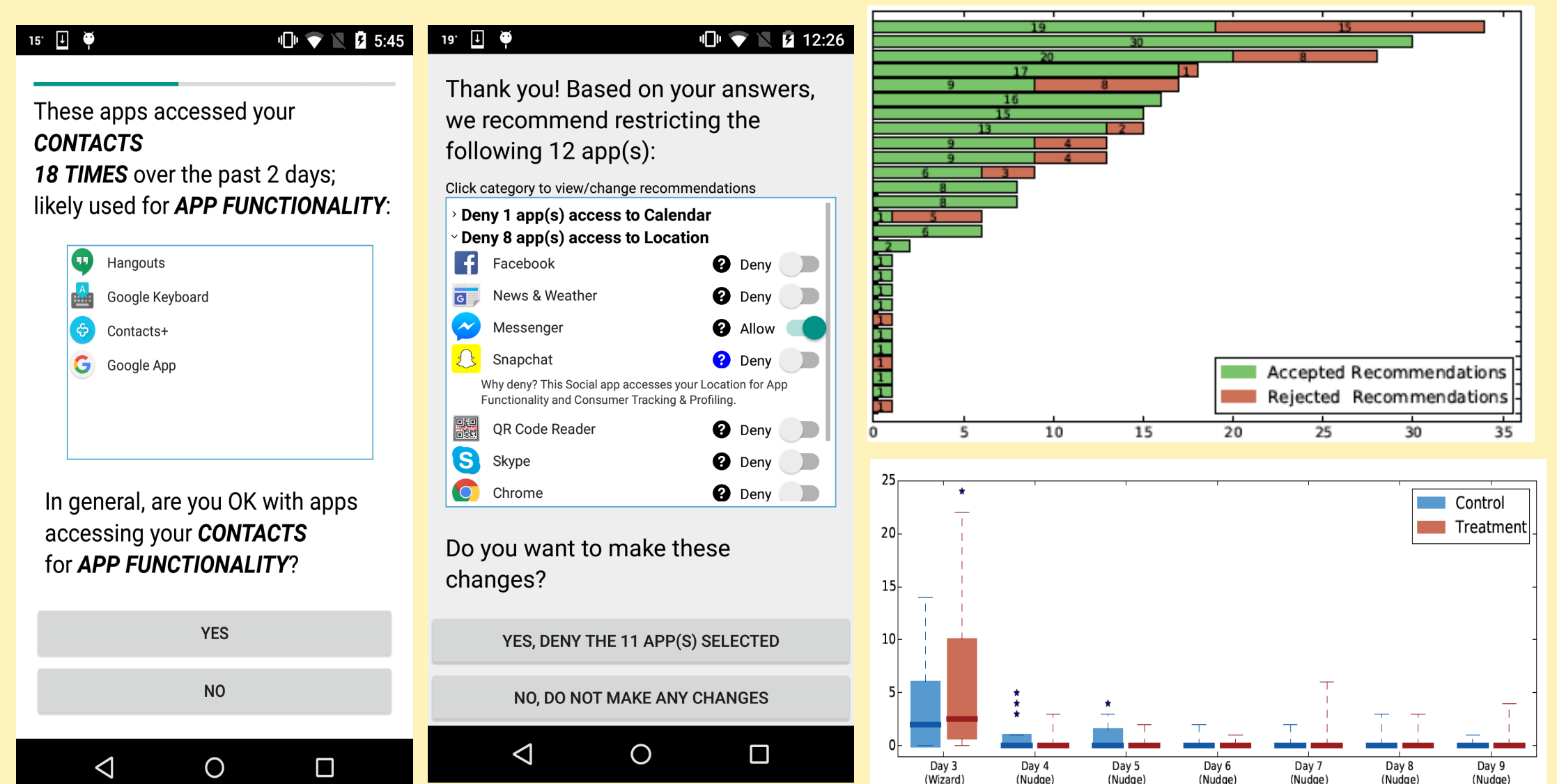
We are currently extending our personalized privacy assistant to capture users' privacy preferences for IoT devices.

Interested in meeting the PIs? Attach post-it note below!