User Interactions and Permission Use on Android

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Interactive Use
Background Use
How do users reason about these uses?

Is that what apps are doing?
Two Studies, Contrasted

**App Study**: How do apps use permissions?
  - When does interactivity influence use?

**User Study**: When do users *expect* use?
Are apps “doing the right thing”
The image shows a bar chart illustrating the percent of patterns across various categories in a smartphone. The categories include Microphone, Media/SD Card, Camera, Calendar, Contacts, SMS, Running Tasks, Location, Calls, Accounts, Power/Diagnostics, Bluetooth, and Phone State. Each bar is color-coded as follows: Click, Page, Startup, Bg-App, Bg-Ext, Uncertain.
Observation: some resources already used interactively
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Some could be more
Observation: some resources already used interactively

Some **could be more**

Some **rarely** used interactively
User Study

Measure: do user expectations align with patterns observed in apps?

Users watch slideshows of app screenshots
“Is Background use Expected after Foreground use?”
Results

Users much more likely to expect after Click
  • 106 times Click as Background
Results

Users **much more** likely to expect after Click

- 106 times Click as Background

“On first use” can *condition* users

- E.g., “on first use” in maps app: less likely to expect Bg access later!
Recommendations

Require interactive access for many things now

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Make background use predictable