CSE 340
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Professor: Dr. Jennifer Mankoff
Note-taker email: jial8@uw.edu

Week 6 Lecture 1
The Physical Phone

Notes

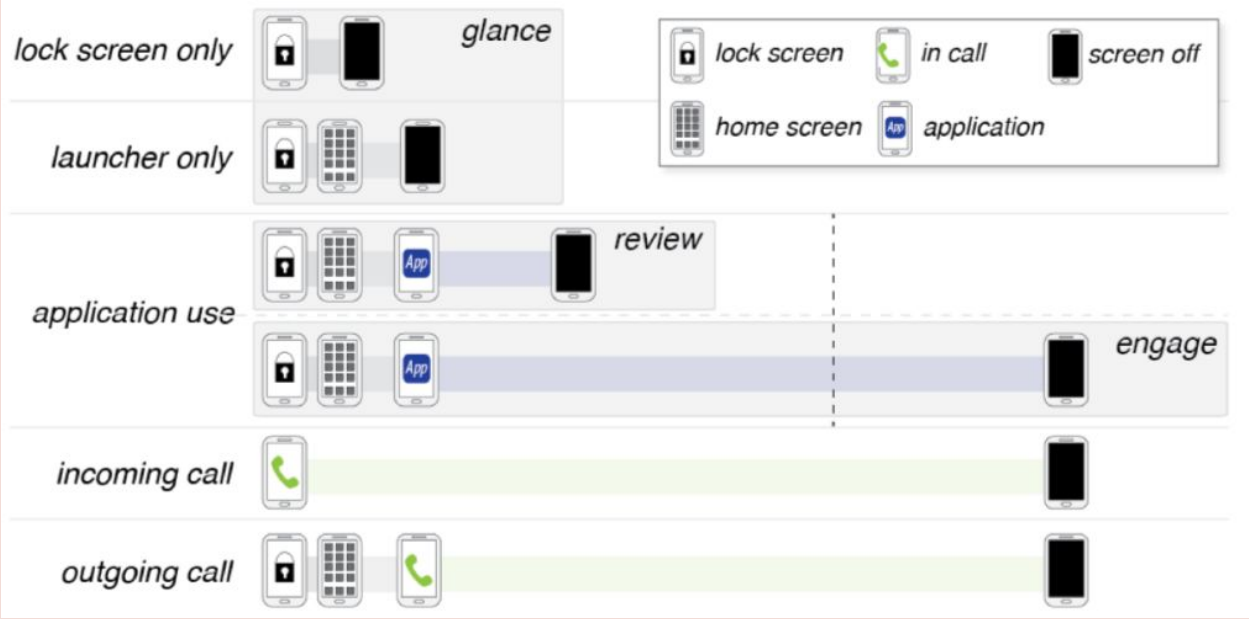
Implicit Sensing

Location-based services, **data gathered upon starting up mobile app/doesn't require user to explicitly activate something within app**, can be used by context aware application (context aware computing)

- **Human activity is easily collected via implicit sensing**
- Ex phone sensors: Gyroscope (light sensors), gravity/pressure applied on screen, screen temperature, WiFi, Bluetooth, Magnetometer
- Smartphones → connectivity, excellent computational ability, many types of sensors
    - ***onSnapshot***(Response response)
        - Capture sensor data at a moment in time (ex: GPS, timestamp, values)
    - *setSnapshotListener*(...) = callback method
- **Fence = filter with 3 callbacks (during, starting, stopping)**
    - mActivityFenceListener = new ....
        - Example:DetectedActivityFence.during(DetectedActivity.WALKING)

List of what phones DON'T do well...

1. **Users must explicitly enter preferences most of the time**
    - Doesn't really know the user, creepy when it tries to (advertisements)
    - Not actually so smart...
    - What it should do: have compelling apps that collect+learn model of human behavior, maintain user privacy rights
        - BIG DATA should: *help users learn* from daily activities/reminders, *motivate* users to accomplish goals, *health* monitoring, *educate*
2. **Usage is not necessarily notification driven.** Research study of 10 participants over a few months shows... different habits of users turning on their phones, why?



    - Vast majority of people turn on their phones to check the time very briefly < 60 seconds ("glance")
    - Pro-active tasks: lock screen convenience → be able to check+delete+manage emails just from the lock screen
3. **Proximity is not standard.** ⅛ of the time, user's phone is off, can't sense anything. Can't always use a phone as a proxy for the user.
4. **Need of smartphones is varied.**

What might we do today?

- **Adaptive** Services: location prediction, text correction, pro-active tasks
- **Novel interaction**: Smart Watch gestures, finger depth sensing, VR intent to sense body posture/movement
- **Behavioral** Imaging: detecting deviations in family routine, detecting+generate safe driving behavior
- **Minimize user burden**

However, there are many challenges:

- Different people use things differently
- Computational complexity
- Battery