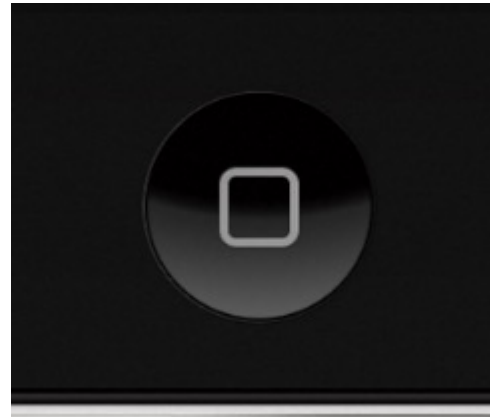


Mobile Interaction

Auditorium Exercise 11

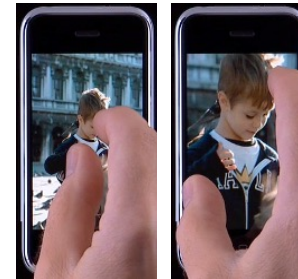
Discussion

Is this a "sensor"?



Sensors in Mobile Devices

- Multi-touch display or keypad
- GPS sensor (location)
- Accelerometer (orientation)
- Magnetometer (heading)
- Gyroscope (rotation)
- Distance sensor (proximity)
- Ambient light sensor (brightness)
- RFID/NFC readers (tags)
- Camera
- Microphone
- Temperature sensor
- Barometer (air pressure) ← interaction?



Multi-touch ("pinch")



GPS Receiver



Accelerometer



Magnetometer

Why there was a need to have sensors in mobile phone?

Why there was a need to have sensors in mobile phone?

- Make it interactive
- Make it smart
- Tracking user
- Imagine if the smartphone only has touch screen, camera and calling etc or components only need for day-to-day interaction

What are the disadvantages of having sensors?

What are the disadvantages of having sensors?

- It allow companies to collect personalized user data.
- It makes it best user tracking device.
- Apple airtag story.
- If not ethically used and protected by companies, soon you will be victim of your data.

What is most of useful use-case of sensors?

What is most of useful use-case of sensors?

- Smartwatch
- Health and well-being
- Car accident

ASSIGNMENT 12 DISCUSSION

Exercise 1 – DTW and Logistic Regression

- a) Compare Dynamic Time Warping and Logistic Regression. List similarities and differences.
- b) Which algorithm is more efficient after the training phase.
- c) Solve the problem with the Dynamic Time Warping algorithm with absolute costs.

Exercise 2 – Logistic Regression

- Implement the function `double h(double[] x, double[] w)` to calculate the **logistic function** (sigmoid function).
- Implement the function `double cost(double hx, int y)` to calculate the **cost of a single training sample**.
- Implement the function `double J(double[] hx, int[] y)` to calculate the **overall cost of training samples**.
- Implement the function `double[] train(double[][] trainXs, int[] trainYs)` to **calculate the weight vector w** using the given training data.

QUESTIONS?