February 3, 2018
Smartphones Overshare

Cross-Curricular Discussion: Q

Directions: The following list of discussion questions is provided to help you take notes, brainstorm ideas and test your thinking in order to be more actively engaged in class discussions related to this article. All questions in this section are related to topics covered in "Smartphones overshare."

PHYSICAL SCIENCES

Discussion questions:

1. How does a smartphone's liquid-crystal display (LCD) work?

2. How does a smartphone's touch-sensitive screen work?

3. How does a smartphone's digital camera work?

4. How does a smartphone's microphone work?

5. How does a smartphone's fingerprint scanner work?

6. How does a smartphone's proximity sensor work?

7. How does a smartphone's light level sensor work?

8. How does a smartphone's GPS navigation work?

9. What does an accelerometer measure and how does a smartphone's accelerometer work?

10. What does a gyroscope measure and how does a smartphone's gyroscope work?

11. What does a barometer measure and how does a smartphone's barometer work?

12. What does a magnetometer measure and how does a smartphone's magnetometer work?

ENGINEERING AND EXPERIMENTAL DESIGN

Discussion questions:

1. What useful things could be done with smartphone sensor data?

2. Based on information in the article, "Smartphones overshare," what disreputable things could be done with smartphone sensor data?

3. How could downloading harmful apps on smartphones be prevented while still allowing useful apps? List potential possible prevention techniques and include a potential downside to every technique (put the downside in parenthesis).

Extension prompts:

4. What data is the graph "Smart phone acceleration varies by mode of transport" displaying (include units in your description)? What is the user likely doing with his or her phone while the data is collected? Explain your answer based on the data shown.

5. Based on the graphs titled "Key tap tilts," roughly how long does it take for a user to enter one letter? Physically, how would you explain the indicated differences among the three letters that are graphed?

6. Based on the graph "As privacy increases, accuracy drops," how does increasing privacy by distorting sensor data affect the accuracy of speech translation and the accuracy of speaker identification software?