

21w.789 Communicating with Mobile Technology

Assignment 5: Location and Networking

Due: 2 April, 2012

Location Assignment

The purpose of this assignment is to explore the properties of various location services that are available on the phone in real-world settings. You will be creating a small application and testing it and presenting the results in a short report.

You should build an application on your smartphone platform of choice that captures location (lat/lon) as well as accuracy error and logs it to a file. You should be able to run the application in three modes (wifi and GPS off, wifi on and GPS off, and wifi and GPS on). You should follow a route near your home or school in each of these conditions and save the log files. This route should include both indoor and outdoor locations.

Analyze the log files to find differences in error in each case. Try to discover why the error occurred and why it was greater in some places than others. Write 2 pages (including figures where necessary) describing your findings. Submit this text along with your log files for this assignment.

Networking Assignment

Measure the download speed and latency of downloading a file on multiple networks in multiple conditions

Write a simple program that downloads this file (<http://web.mit.edu/21w.789/www/papers/griswold2004.pdf>) and records the latency (time until first byte is received), the throughput (bytes/sec) for each 5 second interval, and overall average throughput for each download. The file is 650,924 bytes long.

Download the file on EDGE, 3G, WiFi, and 4G (if available on your device) networks in at least three different places. Try to pick different places (at home, inside a building on campus, outdoors, etc.). Most phones let you disable 4G/3G in the settings in order to get 2/2.5G in the same location.

Write 2 pages on your results where you explain your methods, data observed, and any interesting findings. Submit this along with your log files.