Agenda

Research Conference Updates
Sampling Bias
HW4 and HW5 feedback
HW6
Sampling Bias

“In statistics, sampling bias is a bias in which a sample is collected in such a way that some members of the intended population are less likely to be included than others. It results in a biased sample, a non-random sample of a population (or non-human factors) in which all individuals, or instances, were not equally likely to have been selected. If this is not accounted for, results can be erroneously attributed to the phenomenon under study rather than to the method of sampling.” -- wikipedia
Types of sampling bias
  Self selection bias
  Pre-screening
  Exclusion
  etc.

[from wikipedia]
Using signal strength for link quality estimation can introduce sampling bias.
Link quality estimation

Estimate how “good” a link is. Important for link selection.
ETX Estimation Example

Beacons

ETX Estimate (alpha = 0.8)
Link Estimation using PHY info

Unacked

PRR

LQI
Quality of reception = Signal / Noise

Lot of wireless network research tries to understand performance as some function of SNR
“The Prism 2.5 chip-set provides per-frame measurements called RSSI (receive signal strength indication) and “silence value.” The RSSI reflects the total power observed by the radio hardware while receiving the frame, including signal, interference, and background noise. The silence value reflects the total power observed just before the start of the frame. We found that the accuracy of the RSSI and silence readings was within 4 dB by comparison with a spectrum analyzer. This paper reports signal-to-noise ratios derived from the RSSI and silence values.” – [Aguayo et al. 2004]

Quality of reception = Signal / Noise
How to select participants for an HCI study?

What is the possibility of sampling bias?
Example of bias due to a significant change in mixture of data source
Measurement & Data collection

DONAR

- M-Lab servers run **Web100** instrumentation
- Only users' measurements are collected. No other traffic.
How much data? How many tests?

NDT
- Tot tests: 22M
- Tot size: 93TB

NPAD
- Tot tests: 34K
- Tot size: 2GB
HW5

Write a response to the pamphlet on smart meters.
HW6

Make a list of metrics from the ten research papers you selected

Define each metric in a few sentences.