Assignment #3B

Probability Ideas & Graphing
(Continued)
Probability/Statistics: Questions

- FINISH UP FROM LAST TIME…
- If two RVs (A and B) are independent, what is P(A|B) in terms of P(A) and P(B)? What does the knowledge about the occurrence of B give you in this case?
- What information can you get from a CCDF that is not prominent in a pdf?
- What is the difference between mean, median and mode? When would you use each?
- How is CoV different from covariance and correlation coefficient?
- How are confidence intervals different from hypothesis tests?
- Why is the normal distribution so important?
- State one key implication of heavy-tailed distribution (in internet modeling). Why does poisson modeling fail for internet traffic?
Probability/Statistics: More Questions

- Under what conditions do binomial distributions tend towards normal distribution?
- How are the poisson and exponential distributions related?
- How are normal distributions “standardized”? What is the z-variate?
- Look up $z < 0.45$ in the normal distribution table:
  - [http://www.math.unb.ca/~knight/utility/NormTble.htm](http://www.math.unb.ca/~knight/utility/NormTble.htm)
- In $N(5,10)$, what is $P(3.9 \leq X \leq 9.8)$?
- When do you use the t-distribution instead of the normal distribution for confidence intervals?
- What is the sampling distribution of the sample variance?
- What extra information does an interval estimate (like CI) give over a point estimate (mean)?
Recall: Assignment #3: TCP

- TCP Dynamics

1Mbps, 5ms

DropTail or RED

CBR/UDP, 0.1s ~ **5.0s**

600Kbps, 10ms

FTP/TCP, 0.1s ~ **5.0s**
TCP Performance: Advanced Graphing

- Distribution of Performance
  - Graph the goodputs of each TCP flow in a histogram.

- Based upon the class discussions, come up with at least one other interesting view of TCP performance and graph it.
ALL Students

- Read the abstract/intro/conclusion of the two papers:
  - WiFi Rooftop Network Analysis paper and
  - BGP Instabilities paper
- Focus on the figures and see the “story they tell”…
- Write a brief summary about what are the interesting types of graphs used and why they are effective in making the points of the paper.
Graduate Students: Additional

- Read the abstract/intro/conclusion of the two papers:
  - VPN analysis paper
  - Faloutsos power laws paper
- Focus on the figures and see the “story they tell”…
- Write a brief summary about what are the interesting types of graphs used and why they are effective in making the points of the paper.
Submission

- Write ns2 script to measure TCP (it is a TCP Tahoe) performance.

- Submissions:
  - Answers to probability questions
  - Ns2 simulation script;
  - All the required graphs and statistics.
  - All students: summary of graphing techniques in 2 papers (WiFi and BGP)
  - Grad students: summary of graphing techniques in 2 papers (VPN and Power Laws)

- Due Sunday Sept 25, 11:55pm
Note

- If you want to work on your own machine, you need to install \texttt{ns-allinone-2.26} and graphing tool.
  - Talk to Neeraj (some of these versions may have changed)

- Example graph tool code (old version):
  - On your machine’s directory
    \texttt{~/ns/ns-allinone-2.1b7/graph\_v6.0.4/examples/}
  - Downloadable at \url{http://networks.ecse.rpi.edu/~harrisod}
    which works with ns-2.1b5 (recommended) or ns-2.1b7-old