

Distribution Quality

2/23/2009

Opening Discussion

- You all know where the distributions come into play with things like servicing queues. Let's think of a different type of simulation and where it might be used.
 - Traffic
 - Population modeling
 - Light scattering

Determining Quality of Fit Distribution

- Now that you have picked a distribution to use to represent the data and have parameters for it, the question is, “Is it good enough?”

Heuristic Procedures

- Density-Histogram plots
 - Over plot the histogram of your data with the distribution.
- Distribution-Function-Differences plots
 - Plot the difference between an empirical $F(x)$ and the fitted $F(x)$.
- Probability plots
 - Q-Q plots
 - P-P plots
 - Both show differences between the $F(x)$ plots.

Goodness of Fit Tests

- Chi-Square tests

- Break distribution up into chunks and see if the number of points in each chunk matches.

$$\chi^2 = \sum_{j=1}^k \frac{(N_j - np_j)^2}{np_j}$$

- Kolmogorov-Smirnov tests

$$D_n = \sup_x (|F_n(x) - \hat{F}_n(x)|)$$

ExpertFit Software

- Lots of the things we have been talking about are very tedious to do.
- Your book contains a student version of the ExpertFit software.
- Section 6.7 runs you through a tutorial on how to use it.

Direction of Class

- Last time I taught this class it was tedious and useless.
- This time I think it is a bit tedious, but I also think it is very useful.
- I don't want to just focus on the things that interest me.

Minute Essay

- Where do you think we should go with this class?
- Remember that assignment #3 is due today.