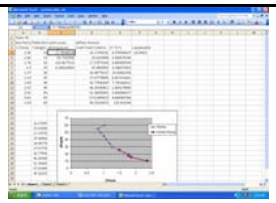
Engin 103 October 14, 2008 back to e-syllabus	Topics: Project 1 -Part II Presentations Logbook questions

Project 1 Part II Presentations: Data Modeling and System Predictability Testing

Excerpt from Project 1 specifications (see link in e-syllabus): "In the second day, you will show the class the predictability of your system. The predictability will be checked as follows: you will be required to show a sufficient (at least 10) number of data (X,Y)'s you measured using your system, and the best model or equation Y'=f(X) you found with Excel in relating these data. Next you will be required to use this model to make a prediction Y' for some new value X, given by the audience, with your model. Next you will run your system for that input X, obtaining the actual output Y. Your system will be considered predictable if Y' and Y differ by less than 10%."

Project 1 leaders: please copy this document and fill in your team response below. Then save as a web page: name "p1p2.html" and upload to your *files* folder.

Team #	Snapshot of Spreadsheet showing best mathematical model for your system	a) Your best model" A=; B=; C=; D= b) What are the requested X= and predicted output Y'= along with their units	c) List the three values obtained Y_1=; Y_2=; Y_3=; d) List their average Y_{av} e) $\lvert Y'-Y_{av}\rvert/Y_{av}$ *100= %	f) Explain your thoughts on what design elements most influenced the predictability obtained g) Explain what can be done to further improve its predictability
1				
2				
3				
4				

5		A=17.79 B=-89.73 C=199.06 D=0.296	Y_1=0.07504 Y_2= 0.3806 Y_3=0.866 Y_{av} $\|Y'-Y_{av}\|/Y_{av}$ *100= 44.05%	The most influence we have on the project is the human timer. During the start and stop, if we don't hit the stopwatch at the exact time, it will give us irregular results (which we encountered). However, we started counting off "One, Two, Three" and released the ball simultaneously, and have attained better accuracy with this method. We could also try putting a bell or something at the end so the ball makes a noise, and we can use that as the stop signal.
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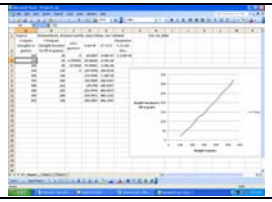
8		a) Linear A=0.599991 B= -39.9984 C= 0 D=0 b) Requested X= 310g Predicted Y= 145.99	c) Y_1=310g Y_2=310g Y_3=310g d) Y_{av}=150g e) $\|Y'-Y_{av}\|/Y_{av}$ *100= 2.6%	f) The spring scale most influenced the predictability g) If we recalibrate or get a better spring scale, we can improve its predictability
9				
10		a) A=-0.01, B=1.04, C=-5.78 b) X=9.5inches, Y'=3.25	c) Y1=3, Y2=3, Y3=3.3 d) Average = 3.1 e) 4.83871%	f) The file we used to create a 'gate' for the ball eliminated human influence, and creating a flour box for the ball to fall into helped us maintain accurate readings of the distance traveled. g) Placing the system in a vacuum eliminates air friction

According to Project 1 specifications (e-syllabus) the grading criteria are as follow:

Items	Points for both Part I and Part II
Project completed and presented	70
Project performance (predictability)	50

Good design (spreadsheet and data modeling)	30
Project presentation and webpage	50

Project 1 -part II/ Teams	1	2	3	4	5	6	7	8	10
Project completed (35)									
Spreadsheet and data modeling (15)									
System predictability (25)									
Presentation and web page (25)									
Total part I (100)									

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LOGBOOK: example of a logbook page

-Use a quadrille notebook; number all pages; date all entries
-Write your notes for all activities, thoughts, problems and solutions, and learning conclusions related to Engin 103. You should write down progress, outcomes, and conclusions on projects and teamwork; conclusions from class work (including LabVIEW) and homework.
-In addition you should answer in the logbook all questions listed in these notes in blue, as shown below:

19) Insert the spreadsheet made by your team for the system presented. Make a table of the coefficients and parameter s for the different models considered by the team, similar to that submitted in CW4. Explain which model was chosen to be the best and why.
20) For each of the other teams, list their predictability results (in percentage error between prediction and average measurement done in class) and try to critically relate these results with their system designs.

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