

Digipen Institute of Technology

CS 398-395: Class Exercise 1

Due: September 11,2020

Objectives:

- Help students to solve numeric examples using simple linear regression.

Tools:

- Any editor of your choice (i.e. MS word, Notepad++, etc), calculator.

Instructions

- Deadline for submission is 09-11-2020 at 20:00 (PST) (End of the class).
- No late submission is accepted.
- Please submit online at the submission page (Moodle).
- This is a group exercise 😊

Deliverable:

- GroupNo_SLR_1.pdf
- At the top of the document write the name of group members.

Problem Sets

Question 1 [50 points]: A patient is given a drip feed containing a particular chemical and its concentration in his blood is measured, in suitable units, at an hour intervals. The doctors believe that a linear relationship will exist between the variables.

| | | | | | | | |
|-----------------|-----|-----|-----|-----|-----|------|------|
| Time x (hours) | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Concentration y | 2.4 | 4.3 | 5.0 | 6.9 | 9.1 | 11.4 | 13.5 |

1. Draw a scatter Plot for a given data.
2. Describe the relation you see in the plot (i.e positive / negative , etc.).

3. Suppose that we can model our data using simple linear regression we studied in the class.
 - a. Estimate the value for β_0 and β_1 . (show the steps of your work)
 - b. Write the simple linear regression equation.
4. The doctor wishes to estimate the concentration of the chemical in the blood
 - a) after 3.5 hours.
 - b) after 8 hours.