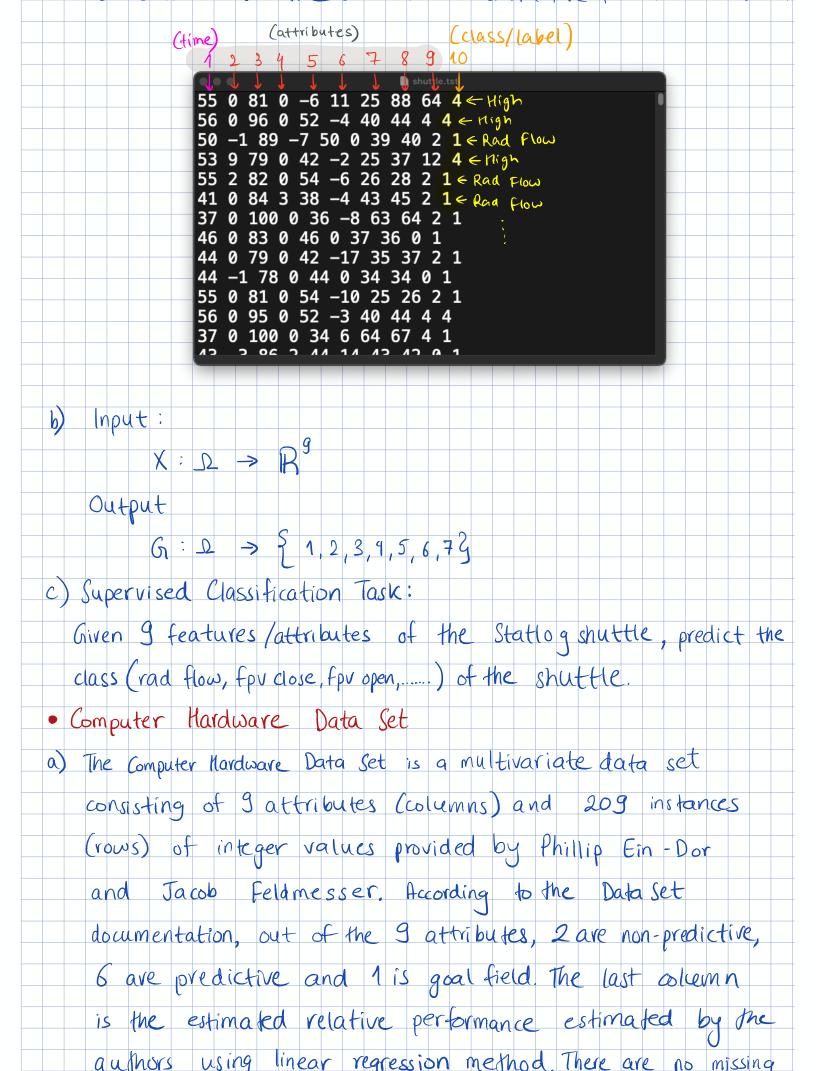
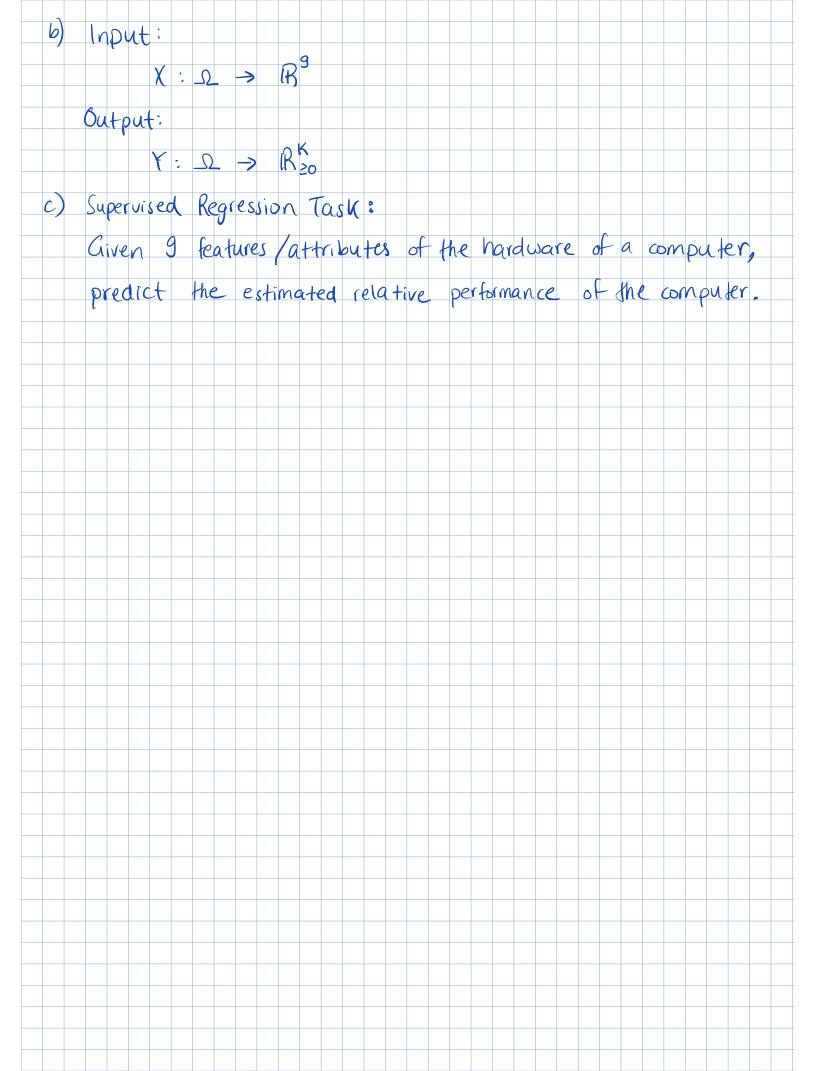
ASSIGNMENT 3 SOLUTION Done By: Nayan Man Singh Pradhan Excercise 1. (Modelling inputs / outputs) In this exercise you work with two data sets: • Statlog (Shuttle) Data Set • Computer Hardware Data Set, which are both available in the UCI Machine Learning Repository. For each of them, perform the following tasks: a) Briefly describe the data set and all involved variables in your own words. If some information is missing on the UCI Repository site, do your own search for these details. b) Model the data set via input and output random variables / vectors. c) Formulate a question that can be solved using machine learning on this data set and give the type of machine learning (supervises / unsupervised / regression / classification) that will allow to answer the question. (8 Points) Station (Shuttle) Data Set The Statlog (Snyttle) Data Set is a multivariate data set consisting of 9 attributes (columns) and 58,000 instances (rows) of integer values provided by Tason Catlett from NASA'S shuttle datasets. According to the Data Set documentation, the shuttle dataset contains 9 attributes, all of which are numerical values. The first attribute is "time". and the last column is the class / label. There are total 7 classes / labels They are: 1 Rad Flow 5 Bypass 6. Bpv Close 2. For Close 3. For Open Bpv Open 4. High The documentation specifies that approximately 80% of the data belongs to class 1. I have attached a labelled screensnot of the downloaded data file for clarification







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38. Frequency of word: "parts"
39. Frequency of word: "pm"
40. Frequency of word: "direct"
41. Frequency of word: "cs"
42. Frequency of word: "meeting"
43. Frequency of word: "original"
44. Frequency of word: "project"
45. Frequency of word: "re"
46. Frequency of word: "edu"
47. Frequency of word: "table"
48. Frequency of word: "conference"
49. Frequency of character: ";"
50. Frequency of character: "("
51. Frequency of character: "["
52. Frequency of character: "!"
53. Frequency of character: "\$"
54. Frequency of character: "#"
55. Average length of uninterrupted sequences of capital letters
56. Length of longest uninterrupted sequence of capital letters
57. Total number of capital letters in the email
58. denotes whether email is spam (1) or not spam (0)
(b)
Source: https://www.emerald.com/insight/content/doi/10.1108/EL-07-2019-0181/full/pdf?title=a-
feature-centric-spam-email-detection-model-using-diverse-supervised-machine-learning-algorithms
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The feature set:
THE reactive Set.
Number of words in email: The total number of words in the email
Number of URLs: The total number of URLs in the email
Number of repetitive words: Total number of words that have been repeated
Number of unique words: Total number of words that have not been repeated
Number of attachments: Total number of attachments in the email
Number of co-occurring words: Total number of same words occurring together
Number of capitalized words: Total number of capitalized words
Number of nouns and pronouns: Total number of nouns and pronouns
Contains emotional symbols: Total number of emotional symbols
Number of question marks: Total number of question marks
• Number of spam words in the lexicon: Total number of spam words from the dictionary of the user
• Features based on the user's profile name: Total number of features based on the user's profile name
Sentiment score of positive words: Computed sentiment score of positive words
Sentiment score of negative words: Computed sentiment score of negative words
Emotional symbols: Total number of emotional symbols
Combined sentiment score: Total combined sentimental score
• Similarity score between the title and content of an email: Score based on similarity between title and
actual content of the mail
actual content of the mail