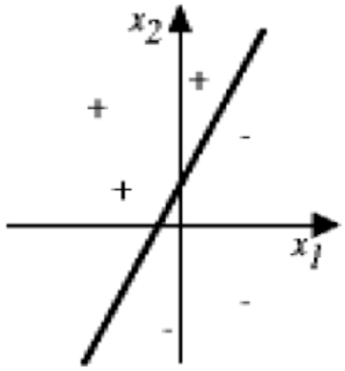
HOMEWORK #2: AIT 736 Summer 2022
Applied MACHINE LEARNING
DUE: July 17, 2022

1. What are the values of weights w_0, w_1, and w_2 for the perceptron whose decision surface is illustrated in the figure? Assume the surface crosses the x_1 axis at -1 and the x_2 axis at 2.

(30 points)



2. Implement the perceptron learning algorithm (PLA) and linear regression (pseudoinverse) discussed in class. Please separate the problem in 3 main steps, for each step indicate the command and describe what it executes.
1) Generation of the data and labeling. [10 points]
2) Apply and describe PLA. [30 points]
3) Apply and describe Linear regression by computing the pseudo inverse. [30 points]
Requirement:

1. You are required **not to use** the existing classifier and regression function in library.
2. Please submit your code in whatever language you prefer.

3 (a) Briefly discuss the sources of bias in supervised learning (5 points)
(b) Discuss the bias variance trade-off (5 points)