Real world problem

Subject: converting real world problem into Boolean function and checking whether it is a linearly separable or not

Problem: Predicting whether a particular ball will give LBW or not?

Training data:

Pitch in line	impact	Missing stumps	LBW
0	0	0	0
0	1	1	0
1	1	1	1

Calculations:

weights: [0. 0. 0.]

bias 0.0

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weights: [0. 0. 0.]

bias 0.0

---

weights: [0. 0. 0.]

bias 0.0

---

weights: [0.01 0.01 0.01]

bias 0.01

---

weights: [0. 0.01 0.01]

bias 0.0

---

weights: [0. 0. 0.]

bias -0.01

---

weights: [0.01 0.01 0.01]

bias 0.0

---

weights: [0. 0.01 0.01]

bias -0.01

---

weights: [0. 0. 0.]

bias -0.02

---

weights: [0.01 0.01 0.01]

bias -0.01

---

weights: [0.01 0.01 0.01]

bias -0.01

---

weights: [0.01 0. 0.]

bias -0.02

---

weights: [0.02 0.01 0.01]

bias -0.01

---

weights: [0.01 0.01 0.01]

bias -0.02

---

weights: [0.01 0.01 0.01]

bias -0.02

---

weights: [0.01 0.01 0.01]

bias -0.02

---

weights: [0.01 0.01 0.01]

bias -0.02

---

weights: [0.01 0.01 0.01]

bias -0.02

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weights: [0.01 0.01 0.01]

bias -0.02

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weights: [0.01 0.01 0.01]

bias -0.02

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weights: [0.01 0.01 0.01]

bias -0.02

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weights: [0.01 0.01 0.01]

bias -0.02

---

weights: [0.01 0.01 0.01]

bias -0.02

OUTPUT:

[0,0,1]→0

[0,1,0]→0

[1,0,0]→0

[1,1,1]→1

Conclusion:

As we can see the data separates the inputs into two different classes with a line

So this real problem can be considered as a linearly separable.