Calvin AI/ML Handout | *Mar 5, 2025*

Name: _____

Consider making an AI agent that plays tic-tac-toe.

1. What might the **input and output** of the agent look like? Give *two specific examples.*

2. Suppose we trained an agent so that it could very accurately predict which move the human player made, in a dataset of human tic-tac-toe games. This is (circle one) supervised / unsupervised / reinforcement. How would this agent perform vs an agent making random moves? Against a human player? How would you quantify that?

3. What could you do to make the agent an even better tic-tac-toe player? Explain.

The following code performs (circle one) classification / regression. **Change it to be the other one**.

```
w1 = random(3, 4)
b1 = random(3)                          a1 = relu(dot(w1, x) + b1)
w2 = random(4, 3)                       out = softmax(dot(w2, a1) + b2)
b2 = random(3)                          loss = -sum(y * log(out)) / n_samples

x.shape = (n_samples, _____).
```

Before any changes, the targets *y* were (circle one) sparse / one-hot / quantitative. y.shape = _____

Before you leave, pick a couple of these questions to react to:

1. What was the most important concept from today for you?
2. What was the muddiest concept today?
3. How does what we did today connect with what you've learned before?
4. What would you like to review or clarify next time we meet?
5. What are you curious, hopeful, or excited about?