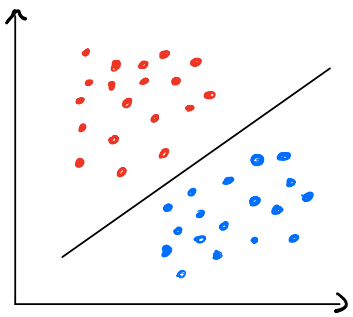
COMP9417 - Week 4 Tutorial notes

Classification



Linearly separable dataset

Perceptron

- The classic perceptron solves only binary classification
- Always converges if linearly separable
- Solutions can differ depending on weights and η

For weights w and learning rate η

```
converged ← 0
while not converged do
    converged ← 1
    for x_i ∈ X, y_i ∈ y do
        if y_i w · x_i ≤ 0 then
            w ← w + η y_i x_i
            converged ← 0
        end if
    end for
end while
```

Logistic Regression

We use the sigmoid function:

$$\sigma(w^T x_i) = \frac{1}{1+e^{-w^T x_i}}$$

$$\sigma(w^T x_i) = \frac{1}{1+e^{-w_0 - w_1 x_i}}$$