

Building ML Models

Mid Semester Expo

Project Overview

Project Overview

- Learn the basics of ML
- Create a math library with operations, activation functions, and auto differentiation
- Create a linear regression model and artificial neural network
- Train and tune the network

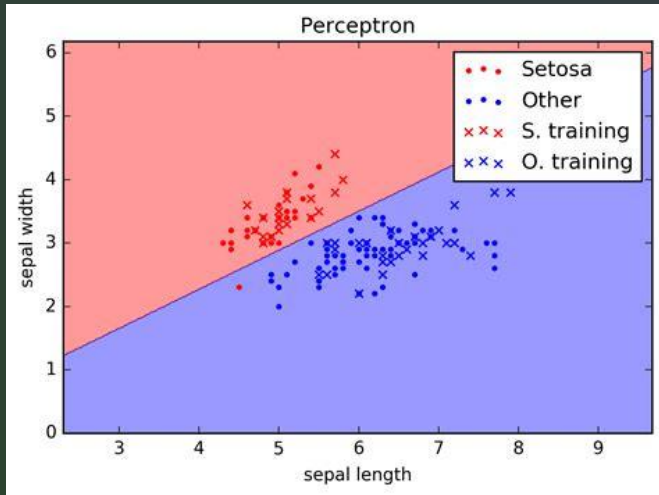
What We've Done So Far

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- Automatic differentiation math library
 - Learned about activation functions
- Simple perceptron model with gradient descent
- **Demo: automatic differentiation and XOR**

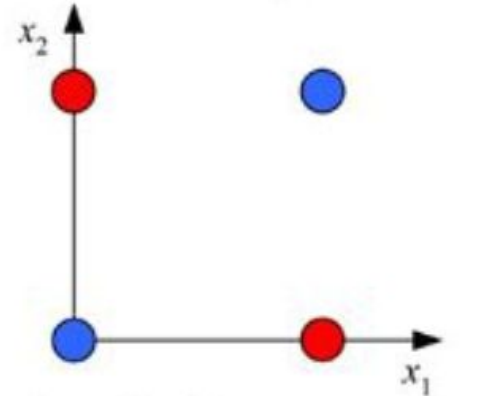
XOR Problem Overview

- Non-linear problem
- A linear classifier cannot solve it easily



x_1	x_2	r
0	0	0
0	1	1
1	0	1
1	1	0

Truth table



Graphical representation

Next Steps

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- Building a linear regression model
- Building an artificial neural network
- Testing the neural network and training hyperparameters