Lecture 13: Linear Regression via Least Squares

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What is supervised learning?

Supervised Learning

Your are given n observations consisting of:

$$\mathbf{x}_{1:n} = \{\mathbf{x}_1, \ldots, \mathbf{x}_n\}$$

(inputs, features, …)

$$\mathbf{y}_{1:n} = \{y_1, \ldots, y_n\}$$

(outputs, targets, labels, …)

Problem: Use the data to learn the map between x and y

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Regression

Your are given n observations consisting of:

$$\mathbf{x}_{1:n} = \{\mathbf{x}_1, \ldots, \mathbf{x}_n\}$$

(inputs, features, …)

$$\mathbf{y}_{1:n} = \{y_1, \ldots, y_n\}$$

Continuous outputs

(outputs, targets, labels, …)

Problem: Use the data to learn the map between x and y

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Classification

Your are given n observations consisting of:

$$\mathbf{x}_{1:n} = \{\mathbf{x}_1, \ldots, \mathbf{x}_n\}$$

(inputs, features, …)

$$\mathbf{y}_{1:n} = \{y_1, \ldots, y_n\}$$

Discrete outputs

(outputs, targets, labels, …)

Problem: Use the data to learn the map between x and y

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