machine learning for artists

RAY LC

traditional programming: explicitly declare

machine learning: fuzzy knowledge

machine learning: inductive trained experience

varieties of machine learning

varieties of machine learning
so what is supervised machine learning?

move the line to minimize errors

supervised machine learning workflow

single layer perceptron vs human neuron

in reality in the human neuron
multilayer neural network

$$
\Delta w = - \text{Learning Constant} \frac{\partial E}{\partial w} \\
\Delta w = (\text{Learning Constant}) (y_{\text{actual}} - y_{\text{ideal}}) \frac{\partial E}{\partial y_{\text{actual}}} \\
\Delta w = (\text{Learning Constant}) (y_{\text{actual}} - y_{\text{ideal}})$$

multilayer neural network: credit assignment

gradient descent in weight space

weight updating using backpropagation

multilayer net for statistical regression

over generalization

Another encoding needed for categorical data

mitigate using unsupervised learning (nonspec patterns)
and now, your exercise

- find photos online that you want to use ML to recognize.
- use ml5.min.js package and an online engine to classify them.
- let’s write classifying.html together (or just use mine).
- run local SimpleHTTPServer.
- in js (given you), the call is:
  ```javascript
  classifier = ml5.imageClassifier('MobileNet', function()
    console.log('Model Loaded!');
  );
  ```
  then call classifier.predict to make classifications.
  
  CONTEST: look for images that machines most likely will get wrong.

example images found on web

| Dishwasher: easier for machines than humans | Sun that got classified as orange: harder for machines |

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