Project Forestcover

Team Members

Task:

Predicting forest cover type from cartographic variables. There are 12 features and 7 categories of forest covers. We use randomly picked 75% of the data samples as training data set and the rest 25% for testing. We use three different classification algorithms: aritificial neural networks, ...

Method 1: ANN

§ Plain ANN

- Structure of the ANN: We choose to have 3 layers(1 hidden layer), 5 hidden nodes, and 7 output nodes, and use L2 regularization.
- Choice of the Activation Functions We use both sigmoid function

$$S(t) = \frac{1}{1+e^{-t}} \tag{1}$$

and tanh function

$$T(t) = 1.7159 tanh(\frac{2}{3}t) \tag{2}$$

as our activation function.

- Predictiing Results
  - Sigmoid function:
  - Tanh function:
- An alternative structure: 3 layers(1 hidden layer), 7 hidden nodes, and 7 output nodes, and use L2 regularization. And the predictiing results are the following:
  - Sigmoid function:
  - Tanh function:

§ Feature Selected ANN

Instead of using all 12 features, we decide to use less feature which are relatively independent to each other. We first contructed a feature scatter plot to observe the dependency of features. (we are not sure which one's to delete for now)

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