1. Introduction
   1. Data: our data is mushroom data—various characteristics and whether the mushroom is poisonous or edible.
   2. 8124 rows
   3. 23 columns
   4. The column of stalk-root has many missing values
2. Models
   1. Models are in the model folder
   2. M01.1 is a logistic regression model. I eliminated the stalk-root column altogether. I used sklearn for the model to train and preprocessed with the ordinal encoder. The result is 94.4% accuracy.
   3. M01.2 is mostly the same as (b) above. However, I ran a loop over np.linspace (0.01, 1000.0, num=5) and adjusted the C parameter of the logistic regression classifier. This process did not result in an improvement in the accuracy of the model.
   4. M02.1 is a neural network model using sklearn, tensorflow, and keras tuner.
      1. The stalk-root column was dropped
      2. Get-dummies was used
      3. Keras tuner was used. Various activation functions, optimizers and other settings were adjusted in a loop.
      4. A 100% accuracy was easily achieved. The activation function of tanh, optimizer of rmsprop, learning rate of 0.001, 8 layers, 5 epochs were used in the winning model.
   5. M02.2 was a repetition of (d) above.
      1. Highly correlated columns were used to eliminate some columns
      2. More columns were dropped using the SelectkBest fundtion
      3. In the end, 54 original columns were dropped to 25 using automated functions
      4. The model was trained in various ways and achieved a 98.7% accuracy with less than half the columns.