

CHRIS ALBON

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One Vs. Rest Logistic Regression

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On their own, logistic regressions are only binary classifiers, meaning they cannot handle target vectors with more than two classes. However, there are clever extensions to logistic regression to do just that. In one-vs-rest logistic regression (OVR) a separate model is trained for each class predicted whether an observation is that class or not (thus making it a binary classification problem). It assumes that each classification problem (e.g. class 0 or not) is independent.

Preliminaries

```
# Load libraries
from sklearn.linear_model import LogisticRegression
from sklearn import datasets
from sklearn.preprocessing import StandardScaler
```

Load Iris Flower Data

```
# Load data
iris = datasets.load_iris()
X = iris.data
y = iris.target
```

Standardize Features

```
# Standardize features
scaler = StandardScaler()
X_std = scaler.fit_transform(X)
```

Create One-Vs-Rest Logistic Regression

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Train One-Vs-Rest Logistic Regression

```
# Train model  
model = clf.fit(X_std, y)
```

Create Previously Unseen Observation

```
# Create new observation  
new_observation = [[.5, .5, .5, .5]]
```

Predict Observation's Class

```
# Predict class  
model.predict(new_observation)
```

```
array([2])
```

View Probability Observation Is Each Class

```
# View predicted probabilities  
model.predict_proba(new_observation)
```

```
array([[ 0.0829087 ,  0.29697265,  0.62011865]])
```

Find an error or bug?

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