In[1]:=
```
dataPath = FileNameJoin[
    {ParentDirectory[NotebookDirectory[]], "data/dataOccupancyPreprocessed.csv"}];
```

In[2]:=
```
data = SemanticImport[dataPath, {"DateTime", "Real", "Real",
     "Real", "Real", "Real", "Boolean"}, "Dataset", HeaderLines → 1];
```

In[3]:=
```
trainData = Values@
    Normal[data[[All, {"Temperature", "Humidity", "Light", "CO2", "HumidityRatio"}]]];
```

In[4]:=
```
cluster[method_: "GaussianMixture", numberClusters_: 2,
  distanceFunction_: EuclideanDistance] := Module[{clusters, rules, classifier},
  clusters = ClusteringComponents[trainData, numberClusters, 1, Method → method,
    DistanceFunction → distanceFunction, PerformanceGoal → "Quality"];
  rules = Map[clusters[[#]] → data[[#, "Occupancy"]] &, Range[Length[data]]];
  classifier = Classify[rules, Method → Automatic];
  Return[ClassifierMeasurements[classifier, rules]];
 ]
```

In[7]:=
```
cm = cluster["GaussianMixture", Automatic, ManhattanDistance];
```

In[8]:=
```
cm["ClassMeanCrossEntropy"]
```

Out[8]=
```
⟨|False → 0.0439887, True → 0.183077|⟩
```

In[9]:=
```
cm["Accuracy"]
```

Out[9]=
```
0.980004
```

In[10]:=
```
cm["FScore"]
```

Out[10]=
```
⟨|False → 0.987529, True → 0.949592|⟩
```

In[11]:=
```
cm["ClassMeanCrossEntropy"]
```

Out[11]=
```
⟨|False → 0.0439887, True → 0.183077|⟩
```

In[12]:=
```
cm["Specificity"]
```

Out[12]=
```
⟨|False → 0.943662, True → 0.989066|⟩
```

In[13]:=
```
cm["Perplexity"]
```

Out[13]=
```
1.07439
```

In[14]:=
```
cm["Precision"]
```

Out[14]=
```
⟨|False → 0.985996, True → 0.955597|⟩
```

In[15]:=
```
cm["ConfusionMatrixPlot"]
```

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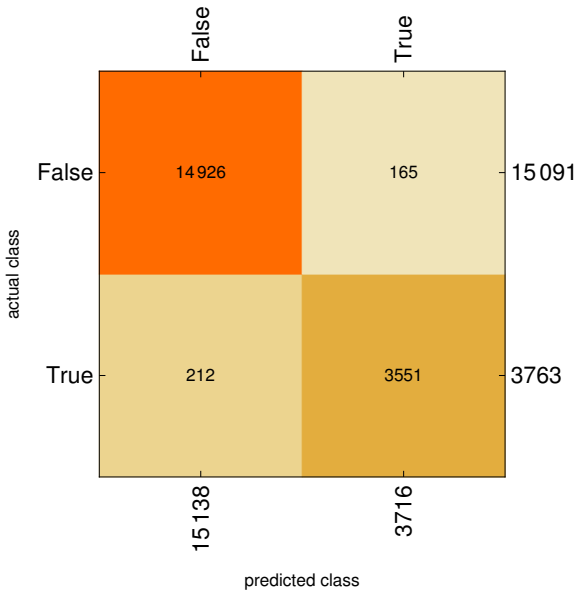
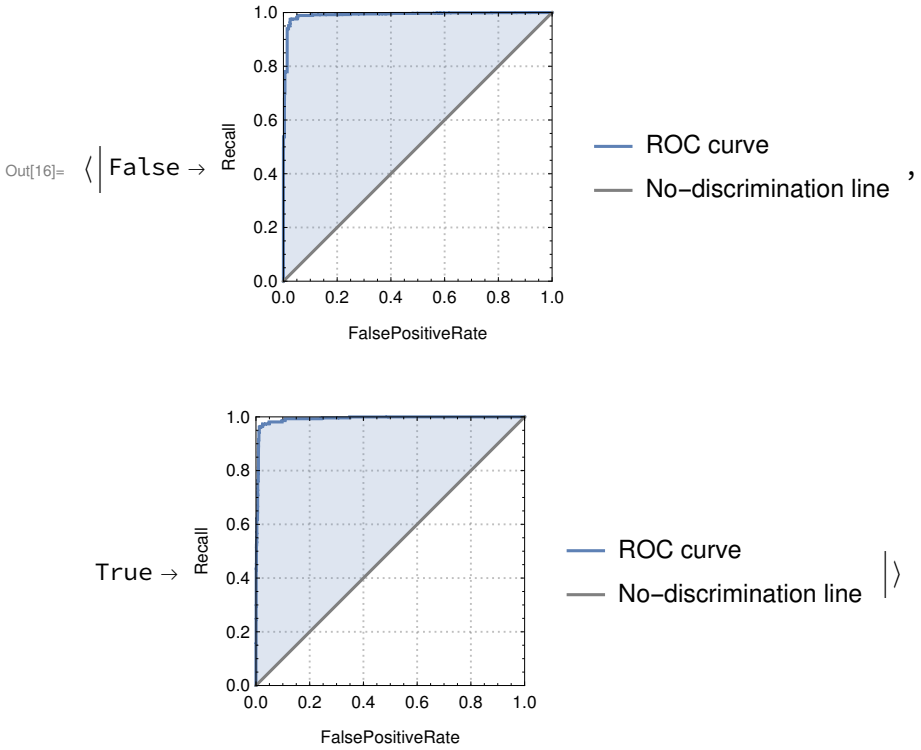
Out[15]=



In[16]:=
```
cm["ROCCurve"]
```

Out[16]=