

KNIME Explorer

- EXAMPLES (guest@publicserver.knime.org)
 - LOCAL (Local Workspace)
 - ChurnPrediction
 - data
 - CallsData.xls
 - ContractData.csv
 - model.pmml
 - newdata.csv
 - TestCallsData.xls
 - TestContractData.csv
 - ChurnPredictionDeploymentStar
 - ChurnPredictionDeploymentStar
 - ChurnPredictionTraining
 - ChurnPredictionTrainingStart

Favorite Nodes

Node Repository

- partition
- Data Manipulation
 - Row
 - Transform
 - Partitioning
- Mining
 - Scoring
 - Cross Validation
 - X-Partitioner
- KNIME Labs
 - Network
 - IO
 - Assign Partition
 - Convert
 - Table
 - Partition Table
 - Filter
 - Partition Filter
 - Minim

Churn Prediction: Training

```

graph LR
    FR[File Reader  
reading contract data] --> J[Joiner  
Node 3]
    XLR[XLS Reader  
reading operational data] --> J
    J --> NTS[Number To String  
Node 4  
converting churn from int to String]
    NTS --> CM[Color Manager  
Node 5]
    CM --> P[Partitioning  
Node 6]
  
```

Read Data

Contract Data

Calls Data

Pre-processing

Conversions

Churn and Area

Code to String

Color Churn

0 -> Blue

1 -> Red

Partitioning

80% training

20% testing

Train Model

decision tree

save to PMML

Evaluation

Apply and score Model

Partitioning

The input table is split into two partitions (i.e. row-wise), e.g. train and test data. The two partitions are available at the two output ports. The following options are available in the dialog:

Dialog Options

Absolute

Specify the absolute number of rows in the first partition. If there are less rows than specified here, all rows are

Outline

Console

KNIME Console

```

WARN Color Manager
WARN Partitioning
Selected column "Phone" with default nominal color mapping.
No sampling method selected
  
```

File Edit View Node Help

100%

KNIME Explorer

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Favorite Nodes

Node Repository
Data Views
Statistics
Mining
Bayes
Clustering
Rule Induction
Neural Network
Decision Tree
Decision Tree Learner
Decision Tree Predictor
Decision Tree To Image
Misc Classifiers
Ensemble Learning
Item Sets / Association Rules
MDS
PCA
PMML
SVM
Feature Selection
Scoring
Chemistry
Misc

Welcome to KNIME

70: ChurnPredictionTrainingStart

Churn Prediction: Training

```
graph LR; A[File Reader: reading contract data] --> C[Joiner: Node 3]; B[XLS Reader: reading operational data] --> C; C --> D[Number To String: Node 4]; D --> E[Color Manager: Node 5]; E --> F[Partitioning: Node 6]; F --> G[Decision Tree Learner: Node 7];
```

Pre-processing

Read Data Contract Data Calls Data	Conversions Churn and Area Code to String	Color Churn 0 -> Blue 1 -> Red	Partitioning 80% training 20% testing	Train Model decision tree save to PMML	Evaluation Apply and score Model
---	--	---	--	---	--

Outline

Console

KNIME Console
WARN Partitioning
WARN Decision Tree Learner
No sampling method selected
Guessing target column: "Phone".

Decision Tree Learner

This node induces a classification decision tree in main memory. The target attribute must be nominal. The other attributes used for decision making can be either nominal or numerical. Numeric splits are always binary (two outcomes), dividing the domain in two partitions at a given split point. Nominal splits can be either binary (two outcomes) or they can have as many

File Edit View Node Help

100%

KNIME Explorer

Welcome to KNIME

0: ChurnPredictionTrainingStart

EXAMPLES (guest@publicserver.knime...)

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data

CallsData.xls

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Decision Tree Predictor

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File Reader

reading contract data

XLS Reader

reading operational data

Join

Node

Read Data

Contract Data

Calls Data

Decision Tree View - 0.7 - Decision Tree Learner

File: HiLite Tree

0 (2.280/2.666)

Table:

Category	%	n
0	85,5	2.280
1	14,5	386
Total	100,0	2.666

Chart:

Color column: Churn

Day Charge

<= 45,175

> 45,175

0 (2.218/2.509)

Table:

Category	%	n
0	88,4	2.218
1	11,6	291
Total	94,1	2.509

Chart:

Color column: Churn

1 (95/157)

Table:

Category	%	n
0	39,5	62
1	60,5	95
Total	5,9	157

Chart:

Color column: Churn

Zoom: 100.0%

ining

Train Model

decision tree

save to PMML

Evaluation

Apply and score Model

Decision Tree Learner

This node induces a classification decision tree in main memory. The target attribute must be nominal. The other attributes used for decision making can be either nominal or numerical. Numeric splits are always binary (two outcomes), dividing the domain in two partitions at a given split point. Nominal splits can be either binary (two outcomes) or they can have as many

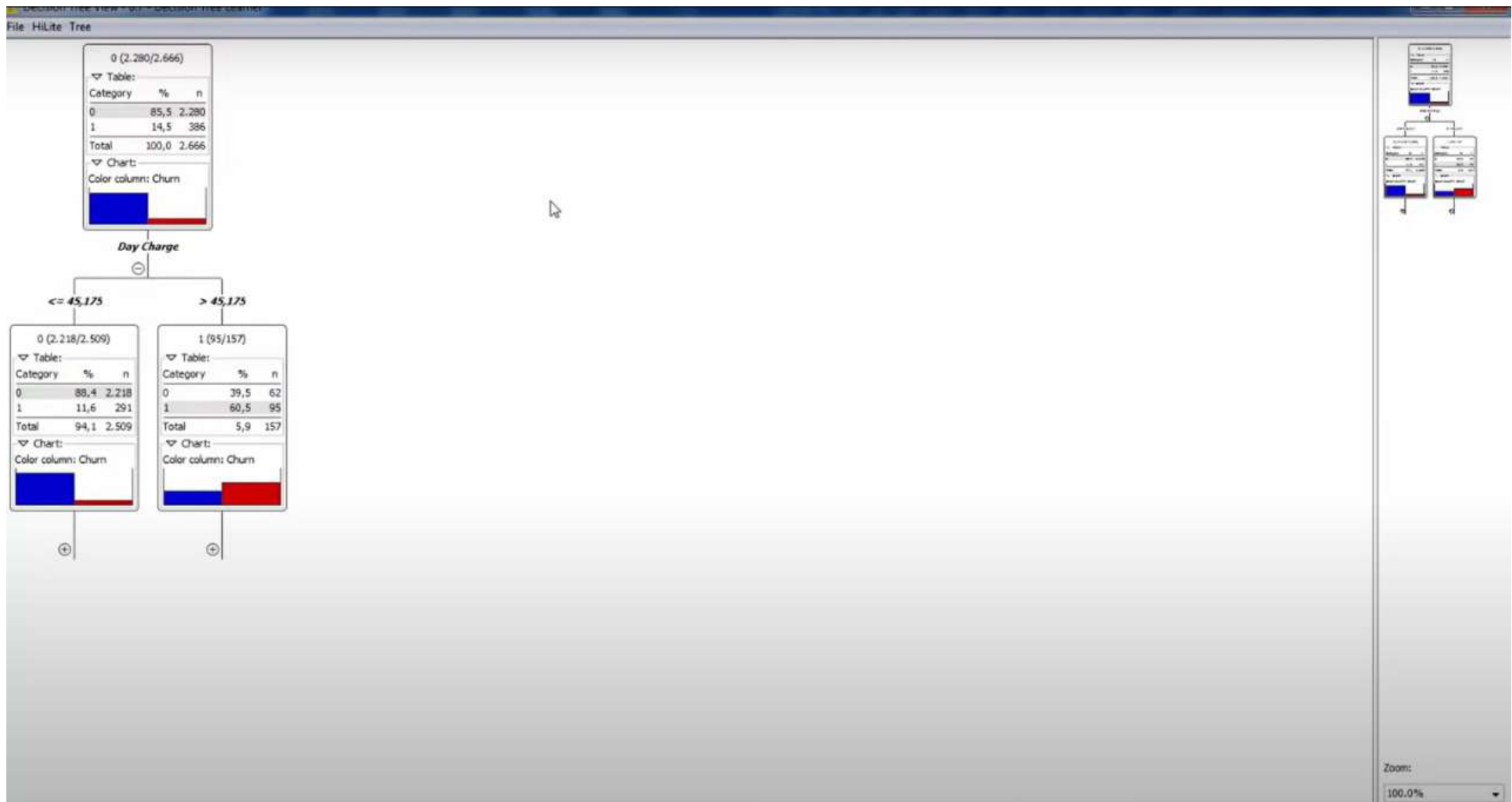
KNIME Console

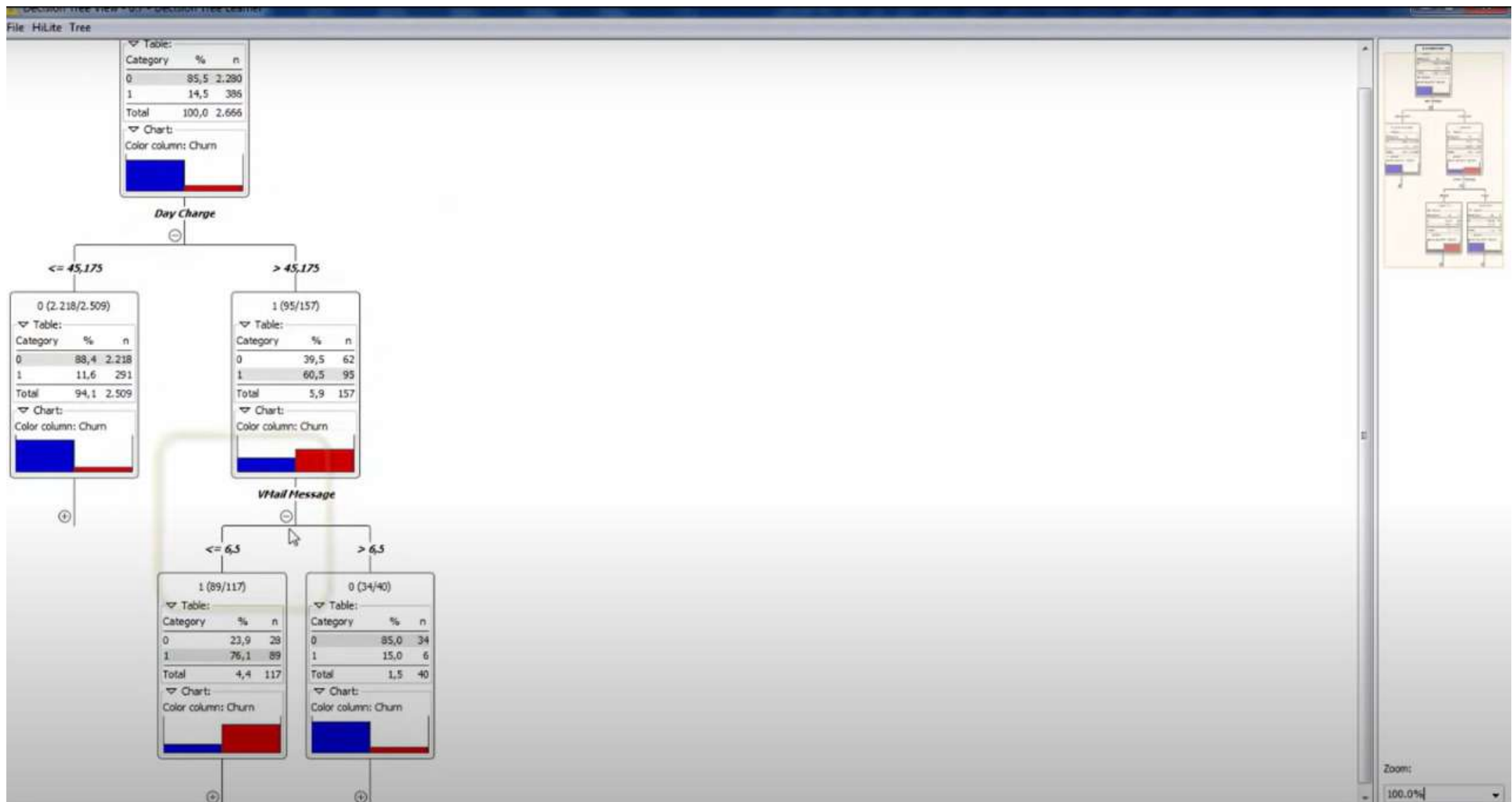
WARN Partitioning

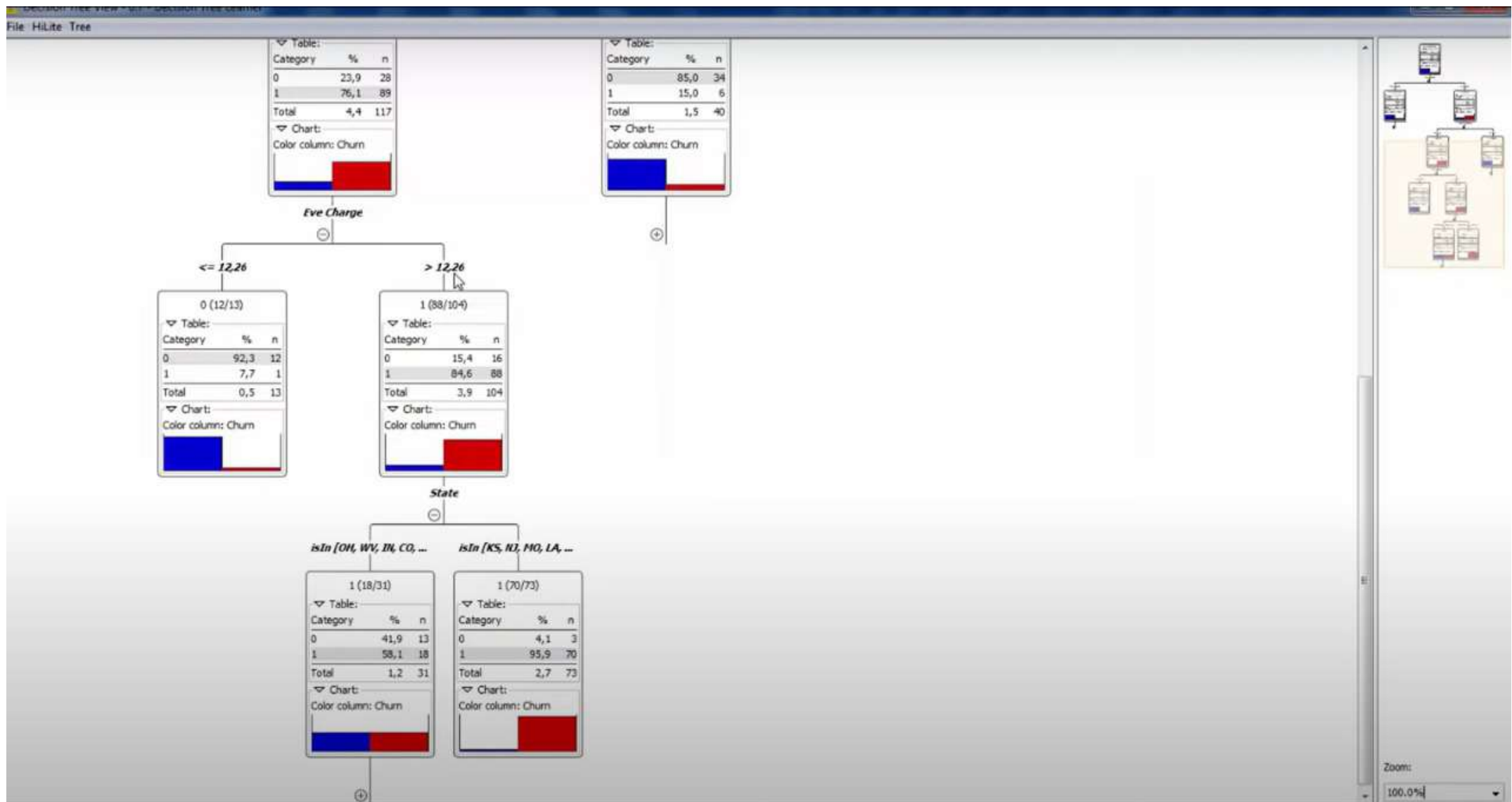
WARN Decision Tree Learner

No sampling method selected

Guessing target column: "Phone".







File Edit View Node Help

100%

KNIME Explorer

Welcome to KNIME

70: ChurnPredictionTrainingStart

EXAMPLES (guest@publicserver.knime.org)

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Decision Tree

Decision Tree Learner

Decision Tree Predictor

Decision Tree To Image

Misc Classifiers

Ensemble Learning

Item Sets / Association Rules

MDS

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SVM

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Scoring

Chemistry

Misc

Classified Data - 0:8 - Decision Tree Predictor

File

Table "default" - Rows: 667 Spec - Columns: 24 Properties Flow Variables

Row ID	Account...	S Churn	Intl Plan	VMail Plan	S State
Row4_Row4	75	0	1	0	OK
Row5_Row5	118	0	1	0	AL
Row6_Row6	121	0	0	1	MA
Row12_Row12	168	0	0	0	IA
Row15_Row15	161	1	0	0	NY
Row17_Row17	93	0	0	0	VT
Row18_Row18	76	0	0	1	VA
Row24_Row24	132	0	0	0	VA
Row27_Row27	54	0	0	0	MT
Row28_Row28	20	0	0	0	MO
Row31_Row31	75	0	0	0	IN
Row34_Row34	57	0	0	1	OK
Row40_Row40	98	0	0	0	GA
Row47_Row47	142	0	0	0	DE
Row50_Row50	52	0	0	0	IA
Row56_Row56	141	0	0	0	CO
Row60_Row60	174	0	0	0	ID

Decision: Training

Partitioning

Node 6

Decision Tree Learner

Node 7

Decision Tree Predictor

Node 8

Read Data

Contract Data

Calls Data

Conversions

Churn and Area

Code to String

Color Churn

0 -> Blue

1 -> Red

Partitioning

80% training

20% testing

Train Model

decision tree

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Outline

Console

KNIME Console

WARN DataTableSpec

WARN DataTableSpec

DataColumnSpec already contains a color handler, ignoring color handler from second s

DataColumnSpec already contains a color handler, ignoring color handler from second s

Decision Tree Predictor

This node uses an existing decision tree (passed in through the model port) to predict the class value for new patterns. The Node can be configured as follows:

Dialog Options

Number of patterns for HiLite

Determines the maximum number of patterns the tree will store to support

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Prediction

allsData.xls
ontractData.csv
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Tree
on Tree Learner
on Tree Predictor

Classified Data - 0:8 - Decision Tree Predictor

File

Table "default" - Rows: 667 Spec - Columns: 24 Properties Flow Variables

Row ID	ght C...	I Intl Calls	D Intl Ch...	D P (Churn=0)	D P (Churn=1)	S Prediction (Churn)
Row4_Row4		3	2.73	0.961	0.039	0
Row5_Row5		6	1.7	0.961	0.039	0
Row6_Row6		7	2.03	0.988	0.012	0
Row12_Row12		2	3.02	0.988	0.012	0
Row15_Row15		9	1.46	0.041	0.959	1
Row17_Row17		3	2.19	0.958	0.042	0
Row18_Row18		5	2.7	0.988	0.012	0
Row24_Row24		2	2.78	0.988	0.012	0
Row27_Row27		4	3.97	0.958	0.042	0
Row28_Row28		6	1.7	0.988	0.012	0
Row31_Row31		5	2.78	0.943	0.057	0
Row34_Row34		4	2.24	0.988	0.012	0
Row40_Row40		2	2.54	0.988	0.012	0
Row47_Row47		5	2	0.375	0.625	1
Row50_Row50		5	2.11	0.988	0.012	0
Row56_Row56		2	2.16	0.958	0.042	0
Row60_Row60		4	3.08	0.958	0.042	0

Read Data

Conversions

Color Churn

Partitioning

T

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Churn Prediction: Training

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Node 1] --> C[Joiner  
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reading operational data  
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    C --> D[Number To String  
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Node 5]
    E --> F[Partitioning  
Node 6]
    F --> G[Decision Tree Learner  
Node 7]
    F --> H[Decision Tree Predictor  
Node 8]
    
```

Decision Tree Predictor

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Churn Prediction Training

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KNIME Console

```

WARN   DataTableSpec
WARN   DataTableSpec
DataColumnSpec already contains a color handler, ignoring color handler from second s
DataColumnSpec already contains a color handler, ignoring color handler from second s
        
```

Press Esc to exit full screen

Churn Prediction: Deployment

```
graph LR; Node5[File Reader Node 5] --> Node7[JPMMML Classifier Node 7]; Node6[PMML Reader Node 6] --> Node7; Node7 --> Score[Data to Report Score];
```

Read New Data
Contract Data
Calls Data

Apply PMML Model

Produce ScoreCard

Data to Report

The incoming data is provided as a data set to the KNIME Report Designer.

Dialog Options

Use custom image scaling

If checked, images in the table will be scaled according to the specified width and height settings. Otherwise the default size of the involved renderer is used.

KNIME Console

```
WARN PMML Writer
WARN File Reader

Output file 'c:\temp\model.pmml' exists and will be overwritten
Missing settings. Please configure the node.
```

File Edit Insert Element Data Page View Run Help

100%

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 - ChurnPredictionDeploymentStart
 - ChurnPredictionTraining
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 - Example Workflow

Data set view

- Score

Palette

- Pointer Select
- Rectangle Select

Report Items

- Label
- Text
- Dynamic Text
- Data
- Image
- Grid
- List
- Table
- Chart

Quick Tools

- Aggregation
- Relative Time Period

0: ChurnPredictionDeploymentStart Report: ChurnPredictionDeploymentStart

1 2 3 4 5 6 7 8 9 10 11

Churn Prediction

Label


Label

Label

Label

Area Code	[Area Code]
Tel. Number	[Phone]
Probability to churn	[P (Churn=1)]

Label



Churn Score
6

Layout Master Page Script XML Source **Preview**

Property Editor - Report

Properties

General

Description

Comments

User Properties

Named Expressions

Resources

Event Handler

Advanced

General

Author:

Created by: Eclipse BIRT Designer Version 3.7.2.v20120213 Build <3.7.2.v20120214-1408>

Path: C:\Users\rosy\KNIME_2.11.3\workspace\ChurnPrediction\ChurnPredictionDeploymentStart\def

Title:

Themes: None

Report Orientation: Left To Right

Placeholder Name: