

Introduction to StatTools and NeuralTools

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StatTools

advanced statistical analysis for Excel



NeuralTools

sophisticated neural networks for Excel

StatTools and Neural Tools

- » Excel add-ins
- » Part of DecisionTools Suite
- » Stand-alone versions available
- » Data analysis tools



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The complete risk and decision analysis toolkit
DecisionTools
Suite



NeuralTools

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Data Set Manager

- » Distinctive feature of StatTools and NeuralTools
- » Define data once, analyze multiple times



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NeuralTools Highlights

- » Easy to use
- » Fast (Probabilistic Neural Nets)
- » Live Prediction



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StatTools Highlights

- » 40 analyses
- » Live-updating statistics and graphs
- » “Stacked” data format



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Sample Data-Based Prediction Problem: Loan Application



Age	40
State	NJ
Housing	Rent
Salary	30000
Loan Amount	10000
Repayment	?

Independent and Dependent Variables/Values

<i>Independent</i>	Age	40
<i>Independent</i>	State	NJ
<i>Independent</i>	Housing	Rent
<i>Independent</i>	Salary	30000
<i>Independent</i>	Loan Amount	10000
<i>Dependent</i>	Repayment	?

Collected Data on Past Applicants



Age	28
State	CT
Housing	own
Salary	66000
Loan Amount	19300
Repayment	timely payments

Age	35
State	NY
Housing	rent
Salary	46000
Loan Amount	34100
Repayment	late payments

Age	21
State	NJ
Housing	rent
Salary	17000
Loan Amount	11300
Repayment	default

Defining Data Set

- » Click inside data set
- » Click Data Set Manager icon
- » NeuralTools variable types assigned automatically



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Getting some Stats and Graphs

- » Application Settings: select location for reports
- » Generate reports
- » Note: reports are live



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Variable Number Format

- » StatTools Data Set Manager:
“Output Format” column



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“Stacked” Data Format

- » Treat single column of data as if it contained multiple variables



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Training a Neural Net

- » Application Settings: location of reports
- » Train, test and predict in one easy step
- » Examine Summary and Detailed Reports
- » Note: predictions are live



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Analyzing Detailed Report with StatTools

- » Task: get statistics for Loan Amount separately for good and bad predictions
- » StatTools features: “stacked” data format, working with multiple data sets



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Numeric Prediction Problem



Machine Hours	1500
Production Runs	21
Overhead	?

Preliminary Look at Data

- » Time Series graph, Autocorrelation analysis
- » Scatterplots: relationship between independent variables and dependent one



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Training a Neural Net

- » Note “Perform Linear Regression” setting
- » Summary Report: linear function better than neural net



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Linear Regression

- » Obtain detailed output (confidence intervals, etc.)
- » Different regression methods



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