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Maintainer: saswss@unx.sas.com (Warren S. Sarle)

This is part 6 (of 7) of a monthly posting to the Usenet newsgroup comp.ai.neural-nets. See the part 1 of this posting for full information what it is all about.

========== Questions ==========

Subject: Commercial software packages for NN simulation?

Since the FAQ maintainer works for a software company, he does not recommend or evaluate software in the FAQ. The descriptions below are provided by the developers or distributors of the software.

Note for future submissions: Please restrict product descriptions to a maximum of 60 lines of 72 characters, in either plain-text format or, preferably, HTML format. If you include the standard header (name, company, address, etc.), you need not count the header in the 60 line maximum. Please confine your HTML to features that are supported by primitive browsers, especially NCSA Mosaic 2.0; avoid tables, for example--use <pre> instead. Try to make the descriptions objective, and avoid making implicit or explicit assertions about competing products, such as "Our product is the *only* one that does so-and-so." The FAQ maintainer reserves the right to remove excessive marketing hype and to edit submissions to conform to size requirements; if he is in a good mood, he may also correct your spelling and punctuation.

The following simulators are described below:

1. BrainMaker
2. SAS Enterprise Miner Software
3. NeuralWorks
4. MATLAB Neural Network Toolbox
5. Propagator
6. NeuroForecaster
7. Products of NESTOR, Inc.

8. Ward Systems Group (NeuroShell, etc.)
9. Neuralyst
10. Cortex-Pro
11. Partek
12. NeuroSolutions
13. Qnet For Windows Version 2.0
14. NeuroLab, A Neural Network Library
15. hav.Software: havBpNet++, havFmNet++, havBpNet:J
16. IBM Neural Network Utility
17. NeuroGenetic Optimizer (NGO) Version 2.0
18. WAND
19. The Dendronic Learning Engine
20. TDL v. 1.1 (Trans-Dimensional Learning)
21. NeurOn-Line
22. Neuframe
23. OWL Neural Network Library (TM)
24. Neural Connection
25. Pattern Recognition Workbench Expo/PRO/PRO+
26. PREVia
27. Trajan 2.1 Neural Network Simulator
28. DataEngine
29. Machine Consciousness Toolbox
30. Professional Basis of AI Backprop
31. STATISTICA: Neural Networks
32. Braincel (Excel add-in)
33. DESIRE/NEUNET
34. Viscovery SOMine
35. NeuNet Pro
36. Neuronics
37. RG Software
38. Cobalt A.I. Code Builder - Neural Network Edition
39. NEURO MODEL and GenOpt

See also http://www.emsl.pnl.gov:2080/proj/neuron/neural/systems/software.html

1. BrainMaker

```
   Product: BrainMaker, BrainMaker Pro
   Company: California Scientific Software
   Address: 10024 Newtown rd, Nevada City, CA, 95959 USA
     Phone: 800 284-8112, 530 478 9040
       Fax: 530 478 9041
       URL: http://www.calsci.com/
Basic capabilities:  train backprop neural nets
Operating system:   Windows, Mac
System requirements:

Approx. price:  $195, $795

BrainMaker Pro 3.7 (DOS/Windows)     $795
    Gennetic Training add-on         $250
BrainMaker 3.7 (DOS/Windows/Mac)     $195
    Network Toolkit add-on           $150
BrainMaker 3.7 Student version       (quantity sales only, about $38 each)
```

```
BrainMaker Pro CNAPS Accelerator Board $8145

Introduction To Neural Networks book $30

30 day money back guarantee, and unlimited free technical support.
BrainMaker package includes:
 The book Introduction to Neural Networks
 BrainMaker Users Guide and reference manual
     300 pages, fully indexed, with tutorials, and sample networks
 Netmaker
     Netmaker makes building and training Neural Networks easy, by
     importing and automatically creating BrainMaker's Neural Network
     files.  Netmaker imports Lotus, Excel, dBase, and ASCII files.
 BrainMaker
     Full menu and dialog box interface, runs Backprop at 3,000,000 cps
     on a 300Mhz Pentium II; 570,000,000 cps on CNAPS accelerator.

---Features ("P" means is available in professional version only):
MMX instruction set support for increased computation speed,
Pull-down Menus, Dialog Boxes, Programmable Output Files,
Editing in BrainMaker,  Network Progress Display (P),
Fact Annotation,  supports many printers,  NetPlotter,
Graphics Built In (P),  Dynamic Data Exchange (P),
Binary Data Mode, Batch Use Mode (P), EMS and XMS Memory (P),
Save Network Periodically,  Fastest Algorithms,
512 Neurons per Layer (P: 32,000), up to 8 layers,
Specify Parameters by Layer (P), Recurrence Networks (P),
Prune Connections and Neurons (P),  Add Hidden Neurons In Training,
Custom Neuron Functions,  Testing While Training,
Stop training when...-function (P),  Heavy Weights (P),
Hypersonic Training,  Sensitivity Analysis (P),  Neuron Sensitivity (P),
Global Network Analysis (P),  Contour Analysis (P),
Data Correlator (P),  Error Statistics Report,
Print or Edit Weight Matrices,  Competitor (P), Run Time System (P),
Chip Support for Intel, American Neurologics, Micro Devices,
Genetic Training Option (P),  NetMaker,  NetChecker,
Shuffle,  Data Import from Lotus, dBASE, Excel, ASCII, binary,
Finacial Data (P),  Data Manipulation,  Cyclic Analysis (P),
User's Guide quick start booklet,
Introduction to Neural Networks 324 pp book
```

2. SAS Enterprise Miner Software

```
Product: SAS Enterprise Miner Solution

         In USA:                  In Europe:
Company: SAS Institute, Inc.      SAS Institute, European Office
Address: SAS Campus Drive         Neuenheimer Landstrasse 28-30
         Cary, NC 27513           P.O.Box 10 53 40
         USA                      D-69043 Heidelberg
                                  Germany
  Phone: (919) 677-8000           (49) 6221 4160
    Fax: (919) 677-4444           (49) 6221 474 850

    URL: http://www.sas.com/
```

To find the addresses and telephone numbers of other SAS Institute offices, including those outside the USA and Europe, connect your web browser to http://www.sas.com/offices/intro.html.

Enterprise Miner is an integrated software product that provides an end-to-end business solution for data mining based on SEMMA methodology (Sample, Explore, Modify, Model, Assess). Statistical tools include clustering, decision trees, linear and logistic regression, and neural networks. Data preparation tools include outlier detection, variable transformations, random sampling, and the

partitioning of data sets (into training, test, and validation data sets). Advanced visualization tools enable you to quickly and easily examine large amounts of data in multidimensional histograms, and to graphically compare modeling results.

The neural network tool includes multilayer perceptrons, radial basis functions, statistical versions of counterpropagation and learning vector quantization, a variety of built-in activation and error functions, multiple hidden layers, direct input-output connections, categorical variables, standardization of inputs and targets, and multiple preliminary optimizations from random initial values to avoid local minima. Training is done by powerful numerical optimization algorithms instead of tedious backprop.

3. NeuralWorks

```
Product: NeuralWorks Professional II Plus
         NeuralWorks Predict
Company: NeuralWare
 Adress: 230 East Main Street
         Suite 200
         Carnegie, PA 15106-2700
  Phone: (412) 278-6280
    FAX: (412) 278-6289

Email: sales@neuralware.com
  URL: http://www.neuralware.com/
```

NeuralWorks Professional II/PLUS is a comprehensive neural network development environment. Professional II/PLUS is available for UNIX, Linux, and Windows operating systems on a variety of hardware platforms; data and network files are fully interchangeable. The Professional II/PLUS package contains comprehensive documentation that addresses the entire neural network development and deployment process, including a tutorial, a guide to neural computing, standard and advanced reference manuals, and platform-specific installation and user guides.

NeuralWare's proprietary InstaNet facility allows quick generation of a neural network based on any one of 28 standard neural network architectures described in neural network literature. After a network is created, all parameters associated with it can be directly modified to more closely reflect the problem domain. Professional II/PLUS includes advanced features such as performance measure-based methods to inhibit over-fitting; automatic optimization of hidden layer size and the ability to prune hidden units; and an Explain facility that indicates which network inputs most influence network outputs.

NeuralWorks Predict is an integrated tool for rapidly creating and deploying prediction and classification applications. Predict combines neural network technology with genetic algorithms, statistics, and fuzzy logic to automatically find solutions for a wide range of problems. Predict incorporates years of modeling and analysis experience gained from working with customers faced with a wide variety of analysis and interpretation problems.

Predict requires no prior knowledge of neural networks. With only minimal user involvement it addresses the issues associated with building robust models from available empirical data. Predict analyzes input data to identify appropriate transforms, partitions the input data into training and test sets, selects relevant input variables, and then constructs, trains, and optimizes a neural network tailored to the problem. For advanced users, Predict also offers direct access to all key training and network parameters.

4. MATLAB Neural Network Toolbox

```
The Mathworks Inc.
3 Apple Hill Drive
Natck, MA 01760
Phone: 508-647-7000
  Fax: 508-647-7001
  URL: http://www.mathworks.com/products/neuralnet/
```

The Neural Network Toolbox is a powerful collection of MATLAB functions for the design, training, and simulation of neural networks. It supports a wide range of network architectures with an unlimited number of processing elements and interconnections (up to operating system constraints). Supported architectures and training methods include: supervised training of feedforward networks using the perceptron learning rule, Widrow-Hoff rule, several variations on backpropagation (including the fast Levenberg-Marquardt algorithm), and radial basis networks; supervised training of recurrent Elman networks; unsupervised training of associative networks including competitive and feature map layers; Kohonen networks, self-organizing maps, and learning vector quantization. The Neural Network Toolbox contains a textbook-quality Users' Guide, uses tutorials, reference materials and sample applications with code examples to explain the design and use of each network architecture and paradigm. The Toolbox is delivered as MATLAB M-files, enabling users to see the algorithms and implementations, as well as to make changes or create new functions to address a specific application.

5. Propagator

```
Contact: ARD Corporation,
         9151 Rumsey Road, Columbia, MD  21045, USA
         propagator@ard.com
Easy to use neural network training package.  A GUI implementation of
backpropagation networks with five layers (32,000 nodes per layer).
Features dynamic performance graphs, training with a validation set,
and C/C++ source code generation.
For Sun (Solaris 1.x & 2.x, $499),
    PC  (Windows 3.x, $199)
    Mac (System 7.x, $199)
Floating point coprocessor required, Educational Discount,
Money Back Guarantee, Muliti User Discount
See http://www.cs.umbc.edu/~zwa/Gator/Description.html
Windows Demo on:
  nic.funet.fi        /pub/msdos/windows/demo
  oak.oakland.edu     /pub/msdos/neural_nets
      gatordem.zip    pkzip 2.04g archive file
      gatordem.txt    readme text file
```

6. NeuroForecaster & VisuaData

```
 Product: NeuroForecaster(TM)/Genetica 4.1a
 Contact: Accel Infotech (S) Pte Ltd
          648 Geylang Road
          Republic of Singapore 1438
   Phone: +65-7446863, 3366997
     Fax: +65-3362833
     URL: http://web.singnet.com.sg/~midaz/
```

Neuroforecaster 4.1a for Windows is priced at **US$1199** per single user license. Please email accel@technet.sg for order form.

NeuroForecaster is a user-friendly ms-windows neural network program specifically designed for building sophisticated and powerful forecasting and decision-support systems (Time-Series Forecasting, Cross-Sectional Classification, Indicator Analysis)
Features:

- GENETICA Net Builder Option for automatic network optimization
- 12 Neuro-Fuzzy Network Models
- Multitasking & Background Training Mode
- Unlimited Network Capacity
- Rescaled Range Analysis & Hurst Exponent to Unveil Hidden Market
- Cycles & Check for Predictability
- Correlation Analysis to Compute Correlation Factors to Analyze the
- Significance of Indicators
- Weight Histogram to Monitor the Progress of Learning
- Accumulated Error Analysis to Analyze the Strength of Input Indicators

The following example applications are included in the package:

- Credit Rating - for generating the credit rating of bank loan applications.
- Stock market 6 monthly returns forecast
- Stock selection based on company ratios
- US$ to Deutschmark exchange rate forecast
- US$ to Yen exchange rate forecast
- US$ to SGD exchange rate forecast
- Property price valuation
- Chaos - Prediction of Mackey-Glass chaotic time series
- SineWave - For demonstrating the power of Rescaled Range Analysis and significance of window size

Techniques Implemented:

- GENETICA Net Builder Option - network creation & optimization based on Darwinian evolution theory
- Backprop Neural Networks - the most widely-used training algorithm
- Fastprop Neural Networks - speeds up training of large problems
- Radial Basis Function Networks - best for pattern classification problems
- Neuro-Fuzzy Network
- Rescaled Range Analysis - computes Hurst exponents to unveil hidden cycles & check for predictability
- Correlation Analysis - to identify significant input indicators
-

Companion Software - VisuaData for Windows A user-friendly data management program designed for intelligent technical analysis. It reads **MetaStock**, **CSI**, **Computrac** and various ASCII data file formats directly, generates over 100 popular and new technical indicators and buy/sell signals.

7. Products of NESTOR, Inc.

```
530 Fifth Avenue;
New York, NY 10036; USA;
Tel.: 001-212-398-7955
URL: http://asweb.artsci.uc.edu/classics/nestor/nestor.html

Founders:
Dr. Leon Cooper (having a Nobel Prize) and Dr. Charles Elbaum
(Brown University).

Neural Network Models:
Adaptive shape and pattern recognition (Restricted Coulomb Energy - RCE)
developed by NESTOR is one of the most powerfull Neural Network Model
used in a later products.

The basis for NESTOR products is the Nestor Learning System - NLS. Later
are developed: Character Learning System - CLS and Image Learning System
```

```
- ILS.  Nestor Development System - NDS is a development tool in
Standard C - a powerfull PC-Tool for simulation and development of
Neural Networks.

NLS is a multi-layer, feed forward system with low connectivity within
each layer and no relaxation procedure used for determining an output
response.  This unique architecture allows the NLS to operate in real
time without the need for special computers or custom hardware.

NLS is composed of multiple neural networks, each specializing in a
subset of information about the input patterns. The NLS integrates the
responses of its several parallel networks to produce a system response.

Minimized connectivity within each layer results in rapid training and
efficient memory utilization- ideal for current VLSI technology. Intel
has made such a chip - NE1000.
```

8. Ward Systems Group (NeuroShell, etc.)

```
Product: NeuroShell Predictor, NeuroShell Classifier,
         NeuroShell Run-Time Server, NeuroShell Trader,
         NeuroShell Trader Professional, NeuroShell 2,
         GeneHunter, NeuroShell Engine
Company: Ward Systems Group, Inc.
Address: Executive Park West
         5 Hillcrest Drive
         Frederick, MD 21702
         USA
  Phone: 301 662-7950
    FAX: 301 662-5666
  Email: WardSystems@msn.com
    URL: http://www.wardsystems.com
```

Ward Systems Group Product Descriptions:

- NeuroShell. Predictor - This product is used for forecasting and estimating numeric amounts such as sales, prices, workload, level, cost, scores, speed, capacity, etc. It contains two of our newest algorithms (neural and genetic) with no parameters for you to have to set. These are our most powerful networks. Reads and writes text files.

- NeuroShell. Classifier - The NeuroShell Classifier solves classification and categorization problems based on patterns learned from historical data. The Classifier produces outputs that are the probabilities of the input pattern belonging to each of several categories. Examples of categories include {acidic, neutral, alkaline}, {buy, sell, hold}, and {cancer, benign}. Like the NeuroShell Predictor, it has the latest neural and genetic classifiers with no parameters to set. These are our most powerful networks. It also reads and writes text files.

- NeuroShell. Run-Time Server - The NeuroShell Run-Time Server allows you to distribute networks created with the NeuroShell Predictor or NeuroShell Classifier from either a simple interface, from your own computer programs, or from Excel spreadsheets.

- NeuroShell Trader. - This is the complete product for anyone trading stocks, bonds, futures, commodities, currencies, derivatives, etc. It works the way you think and work: for example, it reads open, high, low, close type price streams. It contains charting, indicators, the latest neural nets, trading simulations, data downloading, and walk forward testing, all seamlessly working together to make predictions for you. The NeuroShell Trader contains our most powerful network type.

- NeuroShell Trader. Professional - The Professional incorporates the original Trader along with the ability to optimize systems with a genetic algorithm even if they don't include neural nets! For example, you can enter a traditional trading strategy (using crossovers and breakouts) and then find optimal parameters for those crossovers and breakouts. You can also use the optimizer to remove useless rules in your trading strategy.

- NeuroShell. 2 - This is our classic general purpose system highly suited to students and professors who are most comfortable with traditional neural nets (not recommended for problem solving in a business or scientific environment). It contains 16 traditional neural network paradigms (algorithms) and combines ease of use and lots of control over how the networks are trained. Parameter defaults make it easy for you to get started, but provide generous flexibility and control later for experimentation. Networks can either predict or classify. Uses spreadsheet files, but can import other types. Runtime facilities include a source code generator, and there are several options for processing many nets, 3D graphics (response surfaces), and financial or time series indicators. It does not contain our newest network types that are in the NeuroShell Predictor, the NeuroShell Classifier and the NeuroShell Trader.

- GeneHunter. - This is a genetic algorithm product designed for optimizations like finding the best schedules, financial indicators, mixes, model variables, locations, parameter settings, portfolios, etc. More powerful than traditional optimization techniques, it includes both an Excel spreadsheet add-in and a programmer's tool kit.

- NeuroShell. Engine - This is an Active X control that contains the neural and genetic training methods that we have used ourselves in the NeuroShell Predictor, the NeuroShell Classifier, and the NeuroShell Trader. They are available to be integrated into your own computer programs for both training and firing neural networks. The NeuroShell Engine is only for the most serious neural network users, and only those who are programmers or have programmers on staff.

Contact us for a free demo diskette and Consumer's Guide to Neural Networks.

9. Neuralyst

```
Product:  Neuralyst Version 1.4;
Company:  Cheshire Engineering Corporation;
Address:  650 Sierra Madre Villa, Suite 201, Pasedena CA 91107;
  Phone:  818-351-0209;
    Fax:  818-351-8645;
    URL:  http://www.cheshireeng.com/Neuralyst/
```

Basic capabilities: training of backpropogation neural nets. Operating system: Windows or Macintosh running Microsoft Excel Spreadsheet. Neuralyst is an add-in package for Excel. Approx. price: $195 for windows or Mac.

10. Cortex-Pro

Cortex-Pro information is on WWW at:
http://www.reiss.demon.co.uk/webctx/intro.html.
You can download a working demo from there.
Contact: Michael Reiss (http://www.mth.kcl.ac.uk/~mreiss/mick.html)
email: <m.reiss@kcl.ac.uk>.

11. Partek

Partek is a young, growing company dedicated to providing our customers with the best software and services for data analysis and modeling. We do this by providing a combination of statistical analysis and modeling techniques and modern tools such as neural networks, fuzzy logic, genetic algorithms, and data visualization. These powerful analytical tools are delivered with high quality, state of the art software.

Please visit our home on the World Wide Web: www.partek.com

Partek Incorporated
5988 Mid Rivers Mall Dr.
St. Charles, MO 63304
voice: 314-926-2329
fax: 314-441-6881
email: info@partek.com
http://www.partek.com/

12. NeuroSolutions v3.0

```
         Product: NeuroSolutions
         Company: NeuroDimension, Inc.
         Address: 1800 N. Main St., Suite D4
                  Gainesville FL, 32609
           Phone: (800) 634-3327 or (352) 377-5144
             FAX: (352) 377-9009
           Email: info@nd.com
             URL: http://www.nd.com/
Operating System: Windows 95/98/Me/NT/2000
           Price: $195 - $1995 (educational discounts available)
```

NeuroSolutions is a highly graphical neural network development tool for Windows 95/98/Me /NT/2000. This leading edge software combines a modular, icon-based network design interface with an implementation of advanced learning procedures, such as recurrent backpropagation, backpropagation through time and genetic optimization. The result is a virtually unconstrained environment for designing neural networks for research or to solve real-world problems.

Download a free evaluation copy from **http://www.nd.com/download.htm**.

Topologies

- Multilayer perceptrons (MLPs)
- Generalized Feedforward networks
- Modular networks
- Jordan-Elman networks
- Self-Organizing Feature Map (SOFM) networks
- Radial Basis Function (RBF) networks
- Time Delay Neural Networks (TDNN)
- Time-Lag Recurrent Networks (TLRN)
- Recurrent Networks (TLRN)
- General Regression Networks (GRNN)
- Probabilistic Networks (PNN)
- Neuro-Fuzzy Networks
- Support Vector Machines (SVM)

- User-defined network topologies

Learning Paradigms

- Backpropagation
- Recurrent Backpropagation
- Backpropagation through Time
- Conjugate Gradient Learning
- Unsupervised Learning
  - Hebbian
  - Oja's
  - Sanger's
  - Competitive
  - Kohonen

Advanced Features

- ANSI C++ Source Code Generation
- Customized Components through DLLs
- Genetic Optimization
- Microsoft Excel Add-in -- NeuroSolutions for Excel
  - Visual Data Selection
  - Data Preprocessing and Analysis
  - Batch Training and Parameter Optimization
  - Sensitivity Analysis
  - Automated Report Generation
- DLL Generation Utility -- The Custom Solution Wizard
  - Encapsulate any supervised NeuroSolutions NN into a Dynamic Link Library (DLL)
  - Use the DLL to embed a NN into your own Visual Basic, Microsoft Excel, Microsoft Access or Visual C++ application
  - Support for both Recall and Learning networks available
  - Simple protocol for sending the input data and retrieving the network response
- Comprehensive Macro Language
- Fully accessible from any OLE-compliant application, such as:
  - Visual Basic
  - Microsoft Excel
  - Microsoft Access

13. Qnet For Windows Version 2.0

```
Vesta Services, Inc.
1001 Green Bay Rd, Suite 196
Winnetka, IL   60093
Phone:   (708) 446-1655
E-Mail:  VestaServ@aol.com
```

Trial Version Available: http://www.qnetv2k.com/

Vesta Services announces Qnet for Windows Version 2.0. Qnet is an advanced neural network modeling system that is ideal for developing and implementing neural network solutions under Windows. The use of neural network technology has grown rapidly over the past few years and is being employed by an increasing number of disciplines to automate complex decision making and

problem solving tasks. Qnet Version 2 is a powerful, 32-bit, neural network development system for Windows NT, Windows 95 and Windows 3.1/Win32s. In addition its development features, Qnet automates access and use of Qnet neural networks under Windows.

Qnet neural networks have been successfully deployed to provide solutions in finance, investing, marketing, science, engineering, medicine, manufacturing, visual recognition... Qnet's 32-bit architecture and high-speed training engine tackle problems of large scope and size. Qnet also makes accessing this advanced technology easy. Qnet's neural network setup dialogs guide users through the design process. Simple copy/paste procedures can be used to transfer training data from other applications directly to Qnet. Complete, interactive analysis is available during training. Graphs monitor all key training information. Statistical checks measure model quality. Automated testing is available for training optimization. To implement trained neural networks, Qnet offers a variety of choices. Qnet's built-in recall mode can process new cases through trained neural networks. Qnet also includes a utility to automate access and retrieval of solutions from other Windows applications. All popular Windows spreadsheet and database applications can be setup to retrieve Qnet solutions with the click of a button. Application developers are provided with DLL access to Qnet neural networks and for complete portability, ANSI C libraries are included to allow access from virtually any platform.

Qnet for Windows is being offered at an introductory price of $199. It is available immediately and may be purchased directly from Vesta Services. Vesta Services may be reached at (voice) (708) 446-1655; (FAX) (708) 446-1674; (e-mail) VestaServ@aol.com; (mail) 1001 Green Bay Rd, #196, Winnetka, IL 60093

14. NeuroLab, A Neural Network Library

Contact: Mikuni Berkeley R & D Corporation; 4000 Lakeside Dr.; Richmond, CA
Tel: 510-222-9880; Fax: 510-222-9884; e-mail: neurolab-info@mikuni.com

NeuroLab is a block-diagram-based neural network library for Extend simulation software (developed by Imagine That, Inc.). The library aids the understanding, designing and simulating of neural network systems. The library consists of more than 70 functional blocks for artificial neural network implementation and many example models in several professional fields.The package provides icon-based functional blocks for easy implementation of simulation models. Users click, drag and connect blocks to construct a neural network and can specify network parameters--such as back propagation methods, learning rates, initial weights, and biases--in the dialog boxes of the functional blocks.
Users can modify blocks with the Extend model-simulation scripting language, ModL, and can include compiled program modules written in other languages using XCMD and XFCN (external command and external function) interfaces and DLL (dynamic linking library) for Windows. The package provides many kinds of output blocks to monitor neural network status in real time using color displays and animation and includes special blocks for control application fields. Educational blocks are also included for people who are just beginning to learn about neural networks and their applications.
The library features various types of neural networks --including Hopfield, competitive, recurrent, Boltzmann machine, single/multilayer feed-forward, perceptron, context, feature map, and counter-propagation-- and has several back-propagation options: momentum and normalized methods, adaptive learning rate, and accumulated learning.

The package runs on Macintosh II or higher (FPU recommended) with system 6.0.7 or later and PC compatibles (486 or higher recommended) with Windows 3.1 or later, and requires 4Mbytes of RAM. Models are transferable between the two platforms. NeuroLab v1.2 costs US$495 (US$999

bundled with Extend v3.1). Educational and volume discounts are available.
A free demo can be downloaded by ftp://ftp.mikuni.com/pub/neurolab or http://www.mikuni.com/.
Orders, questions or suggestions can be sent by e-mail to neurolab-info@mikuni.com.

15. hav.Software: havBpNet++, havFmNet++, havBpNet:J

```
Names:      havBpNet++
            havFmNet++
            havBpNet:J
Company:    hav.Software
            P.O. Box 354
            Richmond, Tx.  77406-0354 - USA
Phone:      (281) 341-5035
Email:      hav@hav.com
Web:        http://www.hav.com/
```

- havBpNet++ is a C++ class library that implements feedforward, simple recurrent and random-ordered recurrent nets trained by backpropagation. Used for both stand-alone and embedded network training and consultation applications. A simple layer-based API, along with no restrictions on layer-size or number of layers, makes it easy to build standard 3-layer nets or much more complex multiple sub-net topologies.

  Supports all standard network parameters (learning-rate, momentum, Cascade- coefficient, weight-decay, batch training, etc.). Includes 5 activation-functions (Linear, Logistic-sigmoid, Hyperbolic-tangent, Sin and Hermite) and 3 error-functions (e^2, e^3, e^4). Also included is a special scaling utility for data with large dynamic range.

  Several data-handling classes are also included. These classes, while not required, may be used to provide convenient containers for training and consultation data. They also provide several normalization/de-normalization methods.

  havBpNet++ is delivered as fully documented source + 200 pg User/Developer Manual. Includes a special DLL version. Includes several example trainers and consulters with data sets. Also included is a fully functioning copy of the havBpETT demo (with network-save enabled).

  NOTE: a freeware version (Save disabled) of the havBpETT demo may be downloaded from the hav.Software home-page: http://www.neosoft.com/~hav or by anonymous ftp from ftp://ftp.neosoft.com/pub/users/h/hav/havBpETT/demo2.exe.

  ```
  Platforms:      Tested platforms include - PC (DOS, Windows-3.1, NT, Unix),
                  HP (HPux), SUN (Sun/OS), IBM (AIX), SGI (Irix).
                  Source and Network-save files portable across platforms.

  Licensing:      havBpNet++ is licensed by number of developers.
                  A license may be used to support development on any number
                  and types of cpu's.
                  No Royalties or other fees (except for OEM/Reseller)

  Price:          Individual        $50.00 - one developer
                  Site             $500.00 - multiple developers - one location
                  Corporate       $1000.00 - multiple developers and locations
                  OEM/Reseller    quoted individually
                  (by American Express, bank draft and approved company PO)

  Media:  3.5-inch floppy - ascii format (except havBpETT which is in PC-exe
                                          format).
  ```

- havFmNet++ is a C++ class library that implements Self-Organizing Feature Map nets.

Map-layers may be from 1 to any dimension.

havFmNet++ may be used for both stand-alone and embedded network training and consultation applications. A simple Layer-based API, along with no restrictions on layer-size or number of layers, makes it easy to build single- layer nets or much more complex multiple-layer topologies. havFmNet++ is fully compatible with havBpNet++ which may be used for pre- and post- processing.

Supports all standard network parameters (learning-rate, momentum, neighborhood, conscience, batch, etc.). Uses On-Center-Off-Surround training controlled by a sombrero form of Kohonen's algorithm. Updates are controllable by three neighborhood related parameters: neighborhood-size, block-size and neighborhood-coefficient cutoff. Also included is a special scaling utility for data with large dynamic range.

Several **data-handling classes** are also included. These classes, while not required, may be used to provide convenient containers for training and consultation data. They also provide several normalization/de-normalization methods.

havFmNet++ is delivered as fully documented source plus 200 pg User/Developer Manual. Includes several example trainers and consulters with data sets.

```
Platforms:      Tested platforms include - PC (DOS, Windows-3.1, NT, Unix),
                HP (HPux), SUN (Sun/OS), IBM (AIX), SGI (Irix).
                Source and Network-save files portable across platforms.

Licensing:      havFmNet++ is licensed by number of developers.
                A license may be used
                to support development on any number and types of cpu's.
                No Royalties or other fees (possible exception for OEM).

Price:          Individual        $50.00 - one developer
                Site             $500.00 - multiple developers - one location
                Corporate       $1000.00 - multiple developers and locations
                OEM/Reseller    quoted individually
                (by American Express, bank draft and approved company PO)

Media:  3.5-inch floppy - ascii format
```

- havBpNet:J is a Java class library that implements feedforward, simple recurrent (sequential) and random-ordered recurrent nets trained by backpropagation. Used for both stand-alone and embedded network training and consultation applications and applets. A simple layer-based API, along with no restrictions on layer-size or number of layers, makes it easy to build standard 3-layer nets or much more complex multiple sub-net topologies.

  Supports all standard network parameters (learning-rate, momentum, Cascade-coefficient, weight-decay, batch training, error threshold, etc.). Includes 5 activation-functions (Linear, Logistic-sigmoid, Hyperbolic-tangent, Sin and Hermite) and 3 error-functions (e^2, e^3, e^4). Also included is a special scaling utility for data with large dynamic range.

  Several data-handling classes are also included. These classes, while not required, may be used to provide convenient containers for training and consultation data. They also provide several normalization/de-normalization methods.

  ```
  Platforms:  Java Virtual Machines - 1.0 and later

  Licensing:  No Royalties or other fees (except for OEM/Reseller)

  Price:      Individual License is $55.00
  ```

```
                Site, Corporate and OEM/Reseller also available

Media:          Electronic distribution only.
```

16. IBM Neural Network Utility

Product Name: IBM Neural Network Utility
Distributor: Contact a local reseller or call 1-800-IBM-CALL, Dept. SA045 to order.
Basic capabilities: The Neural Network Utility Family consists of six products: client/server capable versions for OS/2, Windows, AIX, and standalone versions for OS/2 and Windows. Applications built with NNU are portable to any of the supported platforms regardless of the development platform. NNU provides a powerful, easy to use, point-and-click graphical development environment. Features include: data translation and scaling, applicaton generation, multiple network models, and automated network training. We also support fuzzy rule systems, which can be combined with the neural networks. Once trained, our APIs allow you to embed your network and/or rulebase into your own applications.
Operating Systems: OS/2, Windows, AIX, AS/400
System requirements: basic; request brochure for more details
Price: Prices start at $250
For product brochures, detailed pricing information, or any other information, send a note to nninfo@vnet.ibm.com.

17. NeuroGenetic Optimizer (NGO) Version 2.0

BioComp's leading product is the NeuroGenetic Optimizer, or NGO. As the name suggests, the NGO is a neural network development tool that uses genetic algorithms to optimize the inputs and structure of a neural network. Without the NGO, building neural networks can be tedious and time consuming even for an expert. For example, in a relatively simple neural network, the number of possible combination of inputs and neural network structures can be easily over 100 billion. The difference between an average network and an optimum network is substantial. The NGO searches for optimal neural network solutions. See our web page at http://www.bio-comp.com. for a demo that you can download and try out. Our customers who have used other neural network development tools are delighted with both the ease of use of the NGO and the quality to their results.

BioComp Systems, Inc. introduced version 1.0 of the NGO in January of 1995 and now proudly announces version 2.0. With version 2.0, the NGO is now equipped for predicting time-based information such as product sales, financial markets and instruments, process faults, etc., in addition to its current capabilities in functional modeling, classification, and diagnosis.

While the NGO embodies sophisticated genetic algorithm search and neural network modeling technology, it has a very easy to use GUI interface for Microsoft Windows. You don't have to know or understand the underlying technology to build highly effective financial models. On the other hand, if you like to work with the technology, the NGO is highly configurable to customize the NGO to your liking.

Key new features of the NGO include:

- Highly effective "Continuous Adaptive Time", Time Delay and lagged input Back Propagation neural networks with optional recurrent outputs, automatically competing and selected based on predictive accuracy.
- Walk Forward Train/Test/Validation model evaluation for assuring model robustness,

- Easy input data lagging for Back Propagation neural models,
- Neural transfer functions and techniques that assure proper extrapolation of predicted variables to new highs,
- Confusion matrix viewing of Predicted vs. Desired results,
- Exportation of models to Excel 5.0 (Win 3.1) or Excel 7.0 (Win'95/NT) through an optional Excel Add-In
- Five accuracies to choose from including; Relative Accuracy, R-Squared, Mean Squared Error (MSE), Root Mean Square (RMS) Error and Average Absolute error.

With version 2.0, the NGO is now available as a full 32 bit application for Windows '95 and Windows NT to take advantage of the 32 bit preemptive multitasking power of those platforms. A 16 bit version for Windows 3.1 is also available. Customized professional server based systems are also available for high volume automated model generation and prediction. Prices start at $195.

```
BioComp Systems, Inc.
Overlake Business Center
2871 152nd Avenue N.E.
Redmond, WA 98052, USA
1-800-716-6770 (US/Canada voice)=20  1-206-869-6770 (Local/Int'l voice)
1-206-869-6850 (Fax)                 http://www.bio-comp.com.
biocomp@biocomp.seanet.com           70673.1554@compuserve.com
```

18. WAND

Weightless Neural Design system for Education and Industry.
Developed by Novel Technical Solutions in association with Imperial College of Science, Technology and Medicine (London UK).
WAND introduces Weightless Neural Technology as applied to Image Recognition.
It includes an automated image preparation package, a weightless neural simulator and a comprehensive manual with hands-on tutorials.
Full information including a download demo can be obtained from:
http://www.sonnet.co.uk/nts/
To contact Novel Technical Solutions email: <neural@nts.sonnet.co.uk>.

19. The Dendronic Learning Engine

The Dendronic Learning Engine (DLE) Software Development Kit (SDK) allows the user to easily program machine learning technology into high performance applications. Application programming interfaces to C and C++ are provided. Supervised learning is supported, as well as the recently developed reinforcement learning of value functions and Q-functions. Fast evaluation on PC hardware is supported by ALN Decision Trees.

An ALN consists of linear functions with adaptable weights at the leaves of a tree of maximum and minimum operators. The tree grows automatically during training: a linear piece splits if its error is too high. The function computed by an ALN is piecewise linear and continuous, and can approximate any continuous function to any required accuracy. Statistics are reported on the fit of each linear piece to test data.

The DLE has been very successful in predicting electrical power loads in the Province of Alberta. The 24-hour ahead load for all of Alberta (using seven weather regions) was predicted using a single ALN. Visit http://www.dendronic.com/applications.htm to learn about other successful applications to ATM communication systems, walking prostheses for persons with incomplete spinal cord injury, and many other areas.

Operating Systems: Windows NT 4.0, 95 and higher.

Price: Prices for the SDK start at $3495 US for a single seat, and are negotiable for embedded learning systems. A runtime non-learning system can be distributed royalty-free.

The power of the DLE can be tried out using an interactive spreadsheet program, ALNBench. ALNBench is free for research, education and evaluation purposes. The program can be downloaded from http://www.dendronic.com/beta.htm (Please note the installation key given there!)

For further information please contact:

```
William W. Armstrong PhD, President
Dendronic Decisions Limited
3624 - 108 Street, NW
Edmonton, Alberta,
Canada T6J 1B4
Email: arms@dendronic.com
URL: http://www.dendronic.com/
Tel. +1 403 421 0800
(Note: The area code 403 changes to 780 after Jan. 25, 1999)
```

20. TDL v. 1.1 (Trans-Dimensional Learning)

```
Platform: Windows 3.*
Company: Universal Problem Solvers, Inc.
WWW-Site (UPSO): http://www.alberts.com/authorpages/00002375/prod_262.htm
or FTP-Site (FREE Demo only): ftp.coast.net, in Directory:
SimTel/win3/neurlnet, File: tdl11-1.zip and tdl11-2.zip
Cost of complete program: US$20 + (US$3 Shipping and Handling).
```

The purpose of TDL is to provide users of neural networks with a specific platform to conduct pattern recognition tasks. The system allows for the fast creation of automatically constructed neural networks. There is no need to resort to manually creating neural networks and twiddling with learning parameters. TDL's Wizard can help you optimize pattern recognition accuracy. Besides allowing the application user to automatically construct neural network for a given pattern recognition task, the system supports trans-dimensional learning. Simply put, this allows one to learn various tasks within a single network, which otherwise differ in the number of input stimuli and output responses utilized for describing them. With TDL it is possible to incrementally learn various pattern recognition tasks within a single coherent neural network structure. Furthermore, TDL supports the use of semi-weighted neural networks, which represent a hybrid cross between standard weighted neural networks and weightless multi-level threshold units. Combining both can result in extremely compact network structures (i.e., reduction in connections and hidden units), and improve predictive accuracy on yet unseen patterns. Of course the user has the option to create networks which only use standard weighted neurons.

System Highlights:

1. The user is in control of TDL's memory system (can decide how many examples and neurons are allocated ; no more limitations, except for your computers memory).
2. TDLs Wizard supports hassle-free development of neural networks, the goal of course being optimization of predictive accuracy on unseen patterns.
3. History option allows users to capture their favorite keystrokes and save them. Easy recall for future use.
4. Provides symbolic interface which allows the user to create:Input and output definition files, Pattern files, and Help files for objects (i.e., inputs, input values, and outputs).

5. Supports categorization of inputs. This allows the user to readily access inputs via a popup menu within the main TDL menu. The hierarchical structure of the popup menu is under the full control of the application developer (i. e., user).
6. Symbolic object manipulation tool: Allows the user to interactively design the input/output structure of an application. The user can create, delete, or modify inputs, outputs, input values, and categories.
7. Supports Rule representation: (a) Extends standard Boolean operators (i.e., and, or, not) to contain several quantifiers (i.e., atmost, atleast, exactly, between). (b) Provides mechanisms for rule revision (i.e., refinement) and extraction. (c) Allows partial rule recognition. Supported are first- and best-fit.
8. Allows co-evolution of different subpopulations (based on type of transfer function chosen for each subpopulation).
9. Provides three types of crossover operators: simple random, weighted and blocked.
10. Supports both one-shot as well as multi-shot learning. Multi-shot learning allows for the incremental acquisition of different data sets. A single expert network is constructed, capable of recognizing all the data sets supplied during learning. Quick context switching between different domains is possible.
11. Three types of local learning rules are included: perceptron, delta and fastprop.
12. Implements 7 types of unit transfer functions: simple threshold, sigmoid, sigmoid-squash, n-level threshold, new n-level-threshold, gaussian and linear.
13. Over a dozen statistics are collected during various batch training sessions. These can be viewed using the chart option.
14. A 140+ page hypertext on-line help menu is available.
15. A DEMONSTRATION of TDL can be invoked when initially starting the program.

21. NeurOn-Line

Built on Gensym Corp.'s G2(r), Gensym's NeurOn-Line(r) is a graphical, object-oriented software product that enables users to easily build neural networks and integrate them into G2 applications. NeurOn-Line is well suited for advanced control, data and sensor validation, pattern recognition, fault classification, and multivariable quality control applications. Gensym's NeurOn-Line provides neural net training and on-line deployment in a single, consistent environment. NeurOn-Line's visual programming environment provides pre-defined blocks of neural net paradigms that have been extended with specific features for real-time process control applications. These include: Backprop, Radial Basis Function, Rho, and Autoassociative networks. For more information on Gensym software, visit their home page at http://www.gensym.com.

22. Neuframe

```
Product: Neuframe v.4 - ActiveX Components
Company: Neusciences
Address: Unit 2
         Lulworth Business Centre
         Totton
         Southampton
         UK
         SO40 3WW
  Phone: +44 023 80 664011
  Email: sales@neusciences.com
    URL: http://www.neusciences.com
```

Neuframe is an easy-to-use, visual, object-oriented approach to problem solving, allowing the user to embed intelligent technologies within their applications. Neuframe provides features that enable businesses to investigate and apply Intelligence Technologies from an initial low cost

experimentation platform, through to the building of embedded implementations using software components.

Includes:

- ODBC
- Data Pre-Processing
- Multi-Layered Perceptron
- Kohonen
- Kmeans
- Radial Basis Function
- Neuro-Fuzzy Logic
- Statistics and Graphics
- Code Extract and OLE for development use

Recommended Configuration - Windows 9X, NT4 or 2000, Pentium 200 with 64Mb Ram

Price: Commercial £1295 - Educational £777 (pounds sterling)

ActiveX Components

KMeans, Linear Regression, Data Encoder: Price £150 each (pounds sterling)

Multi-Layered Perceptron, Radial Basis Function, Projection Pursuit Regression, Kohonen: Price £350 each (pounds sterling)

23. OWL Neural Network Library (TM)

```
Product: OWL Neural Network Library (TM)
Company: HyperLogic Corporation
Address: PO Box 300010
         Escondido, CA 92030
         USA
  Phone: +1 619-746-2765
    Fax: +1 619-746-4089
  Email: prodinfo@hyperlogic.com
    URL: http://www.hyperlogic.com/owl.html
```

The OWL Neural Network Library provides a set of popular networks in the form of a programming library for C or C++ software development. The library is designed to support engineering applications as well as academic research efforts.

A common programming interface allows consistent access to the various paradigms. The programming environment consists of functions for creating, deleting, training, running, saving, and restoring networks, accessing node states and weights, randomizing weights, reporting the complete network state in a printable ASCII form, and formatting detailed error message strings.

The library includes 20 neural network paradigms, and facilitates the construction of others by concatenation of simpler networks. Networks included are:

- Adaptive Bidirectional Associative Memories (ABAM), including stochastic versions (RABAM). Five paradigms in all.
- Discrete Bidirectional Associative Memory (BAM), with individual bias weights for increased pattern capacity.
- Multi-layer Backpropagation with many user controls such as batching, momentum, error

propagation for network concatenation, and optional computation of squared error. A compatible, non-learning integer fixed-point version is included. Two paradigms in all.
- Nonadaptive Boltzmann Machine and Discrete Hopfield Circuit.
- "Brain-State-in-a-Box" autoassociator.
- Competitive Learning Networks: Classical, Differential, and "Conscience" version. Three paradigms in all.
- Fuzzy Associative Memory (FAM).
- "Hamming Network", a binary nearest-neighbor classifier.
- Generic Inner Product Layer with user-defined signal function.
- "Outstar Layer" learns time-weighted averages. This network, concatenated with Competitive Learning, yields the "Counterpropagation" network.
- "Learning Logic" gradient descent network, due to David Parker.
- Temporal Access Memory, a unidirectional network useful for recalling binary pattern sequences.
- Temporal Pattern Network, for learning time-sequenced binary patterns.

Supported Environments:
The object code version of OWL is provided on MS-DOS format diskettes with object libraries and makefiles for both Borland and Microsoft C. An included Windows DLL supports OWL development under Windows. The package also includes Owgraphics, a mouseless graphical user interface support library for DOS.
Both graphical and "stdio" example programs are included.
The Portable Source Code version of OWL compiles without change on many hosts, including VAX, UINX, and Transputer. The source code package includes the entire object-code package.

Price:
USA and Canada: (US) $295 object code, (US) $995 with source
Outside USA and Canada: (US) $350 object code, (US) $1050 with source
Shipping, taxes, duties, etc., are the responsibility of the customer.

24. Neural Connection

```
 Product: Neural Connection
 Company: SPSS Inc.
 Address: 444 N. Michigan Ave., Chicago, IL 60611
   Phone: 1-800-543-2185
          1-312-329-3500 (U.S. and Canada)
     Fax: 1-312-329-3668 (U.S. and Canada)
   Email: sales@spss.com
     URL: http://www.spss.com

SPSS has offices worldwide.  For inquiries outside the U.S. and Canada,
please contact the U.S. office to locate the office nearest you.

Operating system   : Microsoft Windows 3.1 (runs in Windows 95)
System requirements: 386 pc or better, 4 MB memory (8MB recommended), 4 MB
free hard disk space, VGA or SVGA monitor, Mouse or other pointing device,
Math coprocessor strongly recommended
Price: $995, academic discounts available

Description
Neural Connection is a graphical neural network tool which uses an
icon-based workspace for building models for prediction, classification,
time series forecasting and data segmentation.  It includes extensive
data management capabilities so your data preparation is easily done
right within Neural Connection.  Several output tools give you the
ability to explore your models thoroughly so you understand your
```

```
results.

Modeling and Forecasting tools
* 3 neural network tools: Multi-Layer Perceptron, Radial Basis Function,
  Kohonen network
* 3 statistical analysis tools: Multiple linear regression, Closest
  class means classifier, Principal component analysis

Data Management tools
* Filter tool: transformations, trimming, descriptive statistics,
  select/deselect variables for analysis, histograms
* Time series window: single- or multi-step prediction, adjustable step
  size
* Network combiner
* Simulator
* Split dataset: training, validation and test data
* Handles missing values

Output Options
* Text output: writes ASCII and SPSS (.sav) files, actual values,
  probabilities, classification results table, network output
* Graphical output: 3-D contour plot, rotation capabilties, WhatIf? tool
  includes interactive sensititivity plot, cross section, color contour
  plot
* Time series plot

Production Tools
* Scripting language for batch jobs and interactive applications
* Scripting language for building applications

Documentation
* User s guide includes tutorial, operations and algorithms
* Guide to neural network applications

Example Applications
* Finance - predict account attrition
* Marketing - customer segmentation
* Medical - predict length of stay in hospital
* Consulting - forecast construction needs of federal court systems
* Utilities - predict number of service requests
* Sales - forecast product demand and sales
* Science - classify climate types
```

25. Pattern Recognition Workbench Expo/PRO/PRO+

Name: Pattern Recognition Workbench Expo/PRO/PRO+
Company: Unica Technologies, Inc.
Address: 55 Old Bedford Rd., Lincoln, MA 01773 USA
Phone, Fax: (617) 259-5900, (617) 259-5901
Email: unica@unica-usa.com

Basic capabilities:

- Supported architectures and training methods include backpropagation, radial basis functions, K nearest neighbors, Gaussian mixture, Nearest cluster, K means clustering, logistic regression, and more.
- *Experiment managers* interactively control model development by walking you through problem definition and set-up;
  - Provides icon-based management of experiments and reports.
  - Easily performs automated input feature selection searches and automated algorithm

parameter searches (using intelligent search methods including genetic algorithms)
    - Statistical model validation (cross-validation, bootstrap validation, sliding-window validation).
  - "*Giga-spreadsheets*" hold 16,000 columns by 16 million rows of data each (254 billion cells)!
  - Intelligent spreadsheet supports data preprocessing and manipulation with over 100 built-in macro functions. Custom *user functions* can be built to create a library of re-usable macro functions.
  - C source code generation, DLLs, and real-time application linking via DDE/OLE links.
  - Interactive graphing and data visualization (line, histogram, 2D and 3D scatter graphs).

Operating system: Windows 3.1, WFW 3.11, Windows 95, Windows NT (16- and 32-bit versions available)

System requirements: Intel 486+, 8+ MB memory, 5+ MB disk space

Approx. price: software starts at $995.00 (call for more info)
Solving Pattern Recognition Problems text book: $49.95
Money-back guarantee

Comments: Pattern Recognition Workbench (PRW) is a comprehensive environment/tool for solving pattern recognition problems using neural network, machine learning, and traditional statistical technologies. With an intuitive, easy-to-use graphical interface, PRW has the flexibility to address many applications. With features such as automated model generation (via input feature selection and algorithm parameter searches), experiment management, and statistical validation, PRW provides all the necessary tools from formatting and preprocessing your data to setting up, running, and evaluating experiments, to deploying your solution. PRW's automated model generation capability can generate literally *hundreds* of models, selecting the best ones from a thorough search space, ultimately resulting in better solutions!

26. **PREVia**

PREVia is a simple Neural Network-based forecasting tool. The current commercial version is available in French and English (the downloadable version is in English). A working demo version of PREVia is available for download at: http://www.elseware.fr/.

Introducing Previa

Based on a detailed analysis of the forecasting decision process, Previa was jointly designed and implemented by experts in economics and finance, and neural network systems specialists including both mathematicians and computer scientists. Previa thus enables the experimentation, testing, and validation of numerous models. In a few hours, the forecasting expert can conduct a systematic experimentation, generate a study report, and produce an operational forecasting model. The power of Previa stems from the model type used, i.e., neural networks. Previa offers a wide range of model types, hence allowing the user to create and test several forecasting systems, and to assess each of them with the same set of criteria. In this way, Previa offers a working environment where the user can rationalise his or her decision process. The hardware requirements of Previa are: an IBM-compatible PC with Windows 3.1 (c) or Windows95. For the best performance, an Intel 486DX processor is recommended. Previa is delivered as a shrink-wrapped application software, as well as a dynamic link library (DLL) for the development of custom software. The DLL contains all the necessary functions and data structures to manipulate time series, neural networks, and associated algorithms. The DLL can also be used to develop applications with Visual BasicTM. A partial list of features:

```
* Definition of a forecast equation : *
  Definition of the variable to forecast and explanatory variables.
  Automatic harmonisation of the domains and periodicities involved in
     the equation.
* Choice of a neuronal model associated with the forecasting equation :  *
  Automatic or manual definition of multi-layered architectures.
  Temporal models with loop-backs of intermediate layers.
* Fine-tuning of a neuronal model by training *
  Training by gradient back-propagation.
  Automatic simplification of architectures.
  Definition of training objectives by adaptation of the optimisation
     criterion.
  Definition of model form constraints.
  Graphing of different error criteria.
* Analysis of a neuronal model: *
  View of Hinton graph associated with each network layer.
  Connection weight editing.
  Calculation of sensitivity and elasticity of the variable to forecast,
     in relation to the explanatory variables.
  Calculation of the hidden series produced by the neural network.
* Neural Network-Based Forecasting *
  Operational use of a neural network.
* Series Analysis *
  Visualisation of a series curve.  Editing of the series values.
  Smoothing (simple, double, Holt & Winters)
  Study of the predictability of a series (fractal dimension)
  Comparison of two series.  Visualisation of X-Y graphs.
```

27. **Trajan 2.0 Neural Network Simulator**

Trajan Software Ltd,
Trajan House,
68 Lesbury Close,
Chester-le-Street,
Co. Durham,
DH2 3SR,
United Kingdom.

WWW: http://www.trajan-software.demon.co.uk

Email: andrew@trajan-software.demon.co.uk

Tel: +44 191 388 5737. (8:00-22:00 GMT).

Features.

Trajan 2.1 Professional is a Windows-based Neural Network includes support for a wide range of Neural Network types, training algorithms, and graphical and statistical feedback on Neural Network performance.

Features include:

1. **Full 32-bit power.** Trajan 2.1 is available in a 32-bit version for use on Windows 95 and Windows NT platforms, supporting virtually-unlimited network sizes (available memory is a constraint). A 16-bit version (network size limited to 8,192 units per layer) is also available for use on Windows 3.1.
2. **Network Architectures.** Includes Support for Multilayer Perceptrons, Kohonen networks, Radial Basis Functions, Linear models, Probabilistic and Generalised Regression Neural

Networks. Training algorithms include the very fast, modern Levenburg-Marquardt and Conjugate Gradient Descent algorithms, in addition to Back Propagation (with time-dependent learning rate and momentum, shuffling and additive noise), Quick Propagation and Delta-Bar-Delta for Multilayer Perceptrons; K-Means, K-Nearest Neighbour and Pseudo-Inverse techniques for Radial Basis Function networks, Principal Components Analysis and specialised algorithms for Automatic Network Design and Neuro-Genetic Input Selection. Error plotting, automatic cross verification and a variety of stopping conditions are also included.

3. **Custom Architectures.** Trajan allows you to select special Activation functions and Error functions; for example, to use Softmax and Cross-entropy for Probability Estimation, or City-Block Error function for reduced outlier-sensitivity. There are also facilities to "splice" networks together and to delete layers from networks, allowing you to rapidly create pre- and post-processing networks, including Autoassociative Dimensionality Reduction networks.
4. **Simple User Interface.** Trajan's carefully-designed interface gives you access to large amounts of information using Graphs, Bar Charts and Datasheets. Trajan automatically calculates overall statistics on the performance of networks in both classification and regression. Virtually all information can be transferred via the Clipboard to other Windows applications such as Spreadsheets.
5. **Pre- and Post-processing.** Trajan 2.1 supports a range of pre- and post-processing options, including Minimax scaling, Winner-takes-all, Unit-Sum and Unit-Length vector. Trajan also assigns classifications based on user-specified Accept and Reject thresholds.
6. **Embedded Use.** The Trajan Dynamic Link Library gives full programmatic access to Trajan's facilities, including network creation, editing and training. Trajan 2.1 come complete with sample applications written in 'C' and Visual Basic.

There is also a demonstration version of the Software available; please download this to check whether Trajan 2.1 fulfils your needs.

28. **DataEngine**

```
Product: DataEngine, DataEngine ADL, DataEngine V.i

Company: MIT GmbH
Address: Promenade 9
         52076 Aachen
         Germany

  Phone: +49 2408 94580
    Fax: +49 2408 94582
  EMail: mailto:info@mitgmbh.de
    URL: http://www.mitgmbh.de

DataEngine is a software tool for data analysis implementing
Fuzzy Rule Based Systems, Fuzzy Cluster Methods, Neural Networks,
and Neural-Fuzzy Systems in combination with conventional methods
of mathematics, statistics, and signal processing.

DataEngine ADL enables you to integrate classifiers or controllers
developed with DataEngine into your own software environment.  It
is offered as a DLL for MS/Windows or as a C++ library for various
platforms and compilers.

DataEngine V.i is an add-on tool for LabView (TM) that enables you
to integrate Fuzzy Logic and Neural Networks into LabView through
virtual instruments to build systems for data analysis as well as
for Fuzzy Control tasks.
```

29. **Machine Consciousness Toolbox**

Can a machine help you understand the mechanisms of consciousness?
A visual, interactive application for investigating artificial consciousness as inspired by the biological brain.
Free, fully functional, introductory version with user manual and tutorials to download.
Based on the MAGNUS neural architecture developed at Imperial College, London, UK.
Developed by Novel Technical Solutions.
Full information and download from: http://www.sonnet.co.uk/nts

[Note from FAQ maintainer: While this product explores some of the prerequisites of consciousness in an interesting way, it does not deal with deeper philosophical issues such as qualia.]

30. **Professional Basis of AI Backprop**

Backprop, rprop, quickprop, delta-bar-delta, supersab, recurrent networks for Windows 95 and Unix/Tcl/Tk. Includes C++ source, examples, hypertext documentation and the ability to use trained networks in C++ programs. $30 for regular people and $200 for businesses and government agencies. For details see: http://www.dontveter.com/probp/probp.html or http://www.unidial.com/~drt/probp/probp.html

Questions to: Don Tveter, don@dontveter.com

31. **STATISTICA: Neural Networks**

```
Product: STATISTICA: Neural Networks version 4.0
Company: StatSoft, Inc.
Address: 2300 E. 14th St.
         Tulsa, OK  74104
         USA
  Phone: (918) 749-1119
    Fax: (918) 749-2217
  Email: info@statsoft.com
    URL: http://www.statsoft.com/
```

STATISTICA Neural Networks is a comprehensive application capable of designing a wide range of neural network architectures, employing both widely-used and highly-specialized training algorithms. STATISTICA Neural Networks was developed by StatSoft, Inc., the makers of STATISTICA software, and is available and supported through a world-wide network of StatSoft subsidiaries.

The current version STATISTICA Neural Networks 4.0 offers features such as sophisticated training algorithms, an Intelligent Problem Solver that walks the user step-by-step through the analysis, a Neuro-Genetic Input Selection facility, a large selection of supplementary graphs and statistics (e.g., ROC, Response Surfaces, Sensitivity Analysis, Regression and Classification statistics), complete support for API (Application Programming Interface), and the ability to interface with STATISTICA data files and graphs.

STATISTICA Neural Networks includes traditional learning algorithms, such as back propagation and sophisticated training algorithms such as Conjugate Gradient Descent and Levenberg-Marquardt iterative procedures. Typically, choosing the right architecture of a neural network is a difficult and time-consuming "trial and error" process, but STATISTICA Neural Networks specifically does this for the user. STATISTICA Neural Networks features an Intelligent Problem Solver that utilizes heuristics and sophisticated optimization strategies to determine the best

network architecture and walks the user step-by-step through the analysis. The Intelligent Problem Solver compares different network types (including Linear, Radial Basis Function, Multilayer Perceptron, and Bayesian networks), determines the number of hidden units, and chooses the Smoothing factor for Radial Basis Function networks.

The process of obtaining the right input variables in exploratory data analysis -- typically the case when neural networks are used -- also is facilitated by STATISTICA Neural Networks. Neuro-Genetic Input Selection procedures aid in determining the input variables that should be used in training the network. It uses an optimization strategy to compare the possible combinations of input variables to determine which set is most effective. STATISTICA Neural Networks offers complete API support so advanced users (or designers of corporate "knowledge seeking" or "data mining" systems) may be able to integrate the advanced computational engines of the Neural Networks module into their custom applications.

STATISTICA Neural Networks can be used as a stand-alone application or can interface directly with STATISTICA. It reads and writes STATISTICA data files and graphs.

32. **Braincel (Excel add-in)**

```
Product: Braincel
Company: Promised Land Technologies
Address: 195 Church Street 11th Floor
         New Haven, CT 06510
         USA
  Phone: (800) 243-1806 (Outside USA: (203) 562-7335)
    Fax: (203) 624-0655
  Email: gideon@miracle.net
    URL: http://www.promland.com/
         also see http://www.jurikres.com/catalog/ms_bcel.htm
```

Braincel is an add-in to Excel using a training method called backpercolation.

33. **DESIRE/NEUNET**

```
Product: DESIRE/NEUNET
Company: G.A. and T.M. Korn Industrial Consultants
Address: 7750 South Lakeshore Road, # 15
         Chelan, WA 98816
         USA
  Phone: (509) 687-3390
  Email: gatmkorn@aol.com
    URL: http://members.aol.com/gatmkorn
  Price: $ 775 (PC)
         $ 2700 (SPARCstation)
         $ 1800 (SPARCstation/educational)
         Free educational version
```

DESIRE (Direct Executing SImulation in REal time) is a completely interactive system for dynamic-system simulation (up to 6,000 differential equations plus up to 20,000 difference equations in scalar or matrix form; 13 integration rules) for control, aerospace, and chemical engineering, physiological modeling, and ecology. Easy programming of multirun studies (statistics, optimization). Complex frequency-response plots, fast Fourier transforms, screen editor, connection to database program.

DESIRE/NEUNET adds interactive neural-network simulation (to 20,000 interconnections) and fuzzy logic. Simulates complete dynamic systems controlled by neural networks and/or fuzzy logic. Users can develop their own neural networks using an easily readable matrix notation, as in:

```
VECTOR layer2= tanh(W * layer1 + bias)
```

Over 200 examples include:

- backpropagation, creeping random search
- Hopfield networks, bidirectional associative memories
- perceptrons, transversal filters and predictors
- competitive learning, counterpropagation
- very fast emulation of adaptive resonance
- simulates fuzzy-logic control and radial-basis functions

SCREEN-EDITED PROGRAMS RUN IMMEDIATELY AT HIGH SPEED

Package includes 2 textbooks by G.A. Korn: "Neural Networks and Fuzzy-logic Control on Personal Computers and Workstations" (MIT Press, 1995), and "Interactive Dynamic-system Simulatiuon under Windows 95 and NT" (Gordon and Breach, 1998). Please see our Web site for complete tables of contents of books, screen shots, list of users: http://members.aol.com/gatmkorn

Complete educational versions of DESIRE/NEUNET for Windows 95 and NT can now be downloaded FREE as a .zip file which you un-zip to get an automatic INSTALLSHIELD installation program. The educational version is identical to our full industrial version except for smaller data areas (6 instead of 6000 differential equations, smaller neural networks). It will run most examples from both textbooks.

34. **Viscovery SOMine**

```
          Product: Viscovery SOMine
          Company: eudaptics software gmbh
          Address: Helferstorferstr. 5/8
                   A-1010 Vienna
                   AUSTRIA
            Phone: (+43 1) 532 05 70
              Fax: (+43 1) 532 05 70 -21
           e-mail: office@eudaptics.co.at
              URL: http://www.eudaptics.co.at/
Operating System: Windows 95, Windows NT 4.0
           Prices: $1495 (commercial),
                   $695 (non-commercial, i.e. universities)
```

Viscovery SOMine is a powerful and easy-to-use tool for exploratory data analysis and data mining. Employing an enhanced version of Self Organizing Maps it puts complex data into order based on its similarity. The resulting map can be used to identify and evaluate the features hidden in the data. The result is presented in a graphical way which allows the user to analyze non-linear relationships without requiring profound statistical knowledge. The system further supports full pre- and postprocessing, cluster search, association/recall, prediction, statistics, filtering, and animated system state monitoring. Through the implementation of techniques such as SOM scaling, the speed in creating maps is increased compared to the original SOM algorithm.

Download a free evaluation copy from http://www.eudaptics.co.at/demo.htm

35. **NeuNet Pro**

```
Product: NeuNet Pro
Company: CorMac Technologies Inc.
Address: 34 North Cumberland Street
         Thunder Bay, ON P7A 4L4
         Canada
  Phone: (807) 345-7114
```

```
       Fax: (807) 345-7114
     Email: sales@cormactech.com
       URL: http://www.cormactech.com
```

NeuNet Pro is a complete neural network development system:

- Requires Windows 95, Windows 98, or Windows NT4(sp3).
- Powerful, easy to use, point and click, graphical development environment.
- Choose either SFAM or Back Propagation.
- Access data directly from MDB database file.
- Data may contain up to 255 fields.
- Split data into training set and testing set, up to 32,000 rows each.
- Comprehensive graphical reporting of prediction accuracy.
- Table browse, confusion matrix, scatter graph, and time series graph.
- Context sensitive help file with 70 page manual.
- Includes eight sample projects and assortment of sample data.
- Additional sample data available from URL above.
- Entire program may be downloaded from URL above.

36. Neuronics

```
   Product: NNetView
   Company: Neuronics Inc.
   Address: Technoparkstr. 1
            CH-8005 Zurich Switzerland
     Phone: +41 1 445 16 40
       Fax: +41 1 445 16 44
       URL: http://www.neuronics.com
Operating systems: Windows 95/98/NT and on MacOS.
    Prices: 120 EUR for Simulator
            310 EUR for Full version incl. camera- and serial interface
            1260 EUR for Class licence
```

NNetView is a simulator for neural networks that allows you to connect the network directly to the video camera input as well as the input/output of the serial port of your PC. In addition, the network can include a free architecture of 2-dimensional layers with connections in all directions. The most interesting feature is that you can combine different standard network types (such as Backpropagation, Hebb, Reinforcement Learning, Kohonen or Hopfield networks). NNetView allows to learn images (such as faces or colored objects) online and to make robots and other machines adaptive.

37. RG Software

```
 Product: NN50.DLL Neural Network Software Development Kit (SDK)
 Company: RG Software Corporation
 Address: 6838 W. Cholla
          Peoria, Arizona 85345
   Phone: (623) 773-2396
     FAX: (623) 334-3421
   Email: sales@rgsoftware.com
     URL: http://www.rgsoftware.com


The NN50.DLL Neural Network SDK allows you to incorporate a quickprop
neural network in your favorite development environment (VB, FoxPro,
C++, Assembler, Java and just about any other Windows programming
language) with minimal investment and effort. NN50.DLL trains very fast,
saves and loads weights, can be used online, stopped and called during
training and more.  NN50's input relevance function is based on
information gathered from
```

ftp://ftp.sas.com/pub/neural/importance.html.
NN50 is compatible with Windows 95, Windows 98, Windows NT and Windows 2000. Unix and Linux versions are also available. Please see
http://www.rgsoftware.com
for details.

46. Cobalt A.I. Code Builder - Neural Network Edition

Product: Code Builder - Neural Network Edition
Company: Cobalt A.I. Software
Phone: (623) 487-3813
Email: sales@cobaltai.com
URL: http://www.cobaltai.com
Price: U.S. $59.00

Cobalt A.I. Code Builder - Neural Network Edition is a neural network source code generator. Design neural networks and generate efficient object oriented source code for C++, Java or Visual Basic (VB, Excel, Access, Word). Other languages (FoxPro, C# and VB.Net) will soon be integrated. Code Builder uses a "Project Wizard" to analyze data and suggest inputs, then generates source code accordingly.

47. NEURO MODEL and GenOpt

Product: NEURO MODEL and GenOpt
Company: ATLAN-tec KG
Address: Hans-Martin Schleyer Strasse 18A
47877
Germany
Phone: +49 2154 92 48 222
FAX: +49 2154 92 48 100
Email: nm-sales@atlan-tec.com
URL: http://www.atlan-tec.com

Neuro Model (NM) is a Windows based ANN Development Package which does not require any scientific knowledge of ANN. Designed for the process industry, NM showed its best performance with real world data sets. Preprocessing of all data sets by a proprietary cluster algorithm provide reliable and consistant information for training. The internal combination of different mathematical methods eliminates the problem of local optima and overfitting. Modelling of dynamic non-linearity with implemented time behaviour enables the package to predict process conditions online in complexe enviroments like chemical reactors. Extensive reports of all net details include information about training parameters and statistics alerts. Software validation conform FDA could be done by worldwide co-operation with Pharmaplan (FRESENIUS AG).

Ask for FREE (Fullversion on loan) student License for your project.

- Customized Components through DLLs
- Non Linear Genetic Optimization through GEN OPT
- Microsoft Excel Add-in - NM Runtimer for Excel
- Runtimer for Windows NT, 2000, UNIX, DEC-VAX, SOLARIS, LINUX
- Visual Data Selection
- Data Preprocessing, Analysis and Modification
- Batch Training and Parameter Optimization
- Extensive Information by different Sensitivity and Accuracy Analysis
- Security Net Algorithm shows statistical confidence for predicted results
- Comparison of predicted vs. desired results incl. confidence range for the whole topography
- Automated Report Generation incl. DES crypted fingerprint
- Sophisticated Graphic Machine
- Multi Language Library for international Corporate Licenses

Applications References available for:

- Pharma & Bioscience
- Clinical Medicine Research
- Chemical Industry
- Waste Water Treatment Plants
- Food Industry
- Plastic Processing
- Prediction of Energy Consumption Behaviour for Electricity / Water / Gas network

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Next part is part 7 (of 7). Previous part is part 5.