Your strategic competitive advantage

Whether you work in industry, finance, or defense, you know the necessity of maintaining a competitive edge. To keep that edge, many companies have turned to neural networks; powerful tools and techniques for signal processing, modeling, forecasting, and pattern recognition. Neural networks have easily replaced conventional systems using statistical methods, pattern recognition and classification, and linear and non-linear curve fitting. Neural networks provide an advantage through improved quality, productivity, and yield while reducing costs, downtime and scrap.

Neural network solutions are hard at work: **detecting fraud** in loan applications, internet security, insurance and warranty claims, and credit card fraud; **modeling and forecasting** in bankruptcy prediction, credit scoring, securities trading, portfolio evaluation, mail-list management, product marketing and targeted marketing;

and in **process industries** for process modeling, process control, oil and gas exploration, reservoir management, production line management, machine diagnostics, flaw detection, product development, and industrial inspection.

NeuralWare offers the highest quality development products. These products support the latest in application-tested technology. They are available on a wide range of computing platforms. NeuralWare provides the training and support required to ensure that you succeed in the development and deployment of solutions, which utilize neural network technology.

Performance You Can Count On

NeuralWorks Professional II/PLUS is the world's standard in professional neural network development systems. *Professional II/PLUS* allows you to build, train, refine and deploy neural network solutions. For power, flexibility and support, nothing else even comes close. Consider these features:

InstaNet.™ This menu lets you select from any of the major network types to create any of the 28 major paradigms and dozens of variations supported by NeuralWare. Each major class of networks has its own custom menu with options and features specific to that class. For example, the Back-propagation Builder supports standard, cumulative, normalized-cumulative, Delta-Bar-Delta, Extended-Delta-Bar-Delta, Quickprop, and Maxprop learning rules, as well as Cascade architecture and the Logicon Projection Network™. Other major classes of networks include Learning Vector Quantization, Self-Organizing Map, General Regression Network, Genetic Reinforcement Learning, Probabilistic Neural Network, Radial Basis Function Networks, Counter Propagation, Modular Neural Network, Recurrent Networks, Reinforcement Learning, Fuzzy ARTMAP, and dialogs for special purpose networks or networks of historical significance (Adaline, Bi-directional Associative Memory, Brain-State-in-a-Box, Boltzman, Directed Random Search, Hamming, Hopfield, Madaline, Perceptron, Recirculation, and Spatio-Temporal Pattern Recognition).

FlashCode.™ Instantly create ANSI standard C code to deploy your fully trained network. FlashCode now supports all of the major network types. This does not require any additional hardware. You can use these routines to deploy your application, or combine networks together with other advanced technologies such as Expert Systems and Fuzzy Logic. Contact NeuralWare for licensing details.

SaveBest.™ Prevent over-training with SaveBest. At user-specified intervals, the network is tested and the best-performing network is saved. Performance can be based on R-squared, RMS Error, Average Classification Rate or custom designed performance measure. This feature lets you train the network to the optimum degree based on the criteria, which is right for your application.
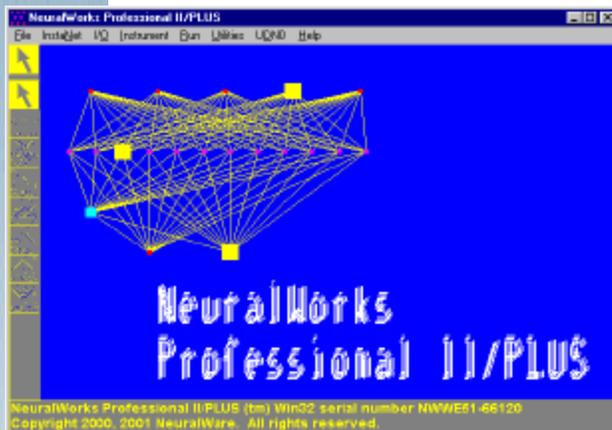
Optimize the Hidden Layer. ™ An enhancement to SaveBest for non-linear feed-forward networks (Backpropagation) provides the capability of automatically optimizing the size of the hidden layer. Each hidden unit is ranked based on the degree to which it improves the objective function. Those units with a negative or minimal contribution are

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eliminated. This capability can be used in conjunction with the facility to periodically prune a network of small weights.

ExplainNet.™ This is a unique facility that tells you why a neural network made its decisions. It shows you which inputs to the model have the most impact on the network output. This is vital for applications like credit scoring. Together with utilities available from NeuralWare technical support, it can be used to do variable selection for building more robust models.

Diagnostics.™ A wide variety of diagnostic tools to monitor network performance and diagnose problems are standard. Each of the major network types have specialized instruments, which can be instantly created and used to observe specific activity. More general instruments can be created with NeuralProbeTM. Custom instruments can be created using User IO extensions. All of the tools you need to build the best networks are at your fingertips.

Graphical User Interface.™ No matter what platform you choose, you will find the same icon-based tool palettes and "mousable menus". Our interface is the same in every version of the product, making it easy to migrate to more powerful computing platforms.

Batch Interface.™ User Control provides the capability for automating the neural network development process through a custom control interface with batch files. These control programs written in C can load, train, and test networks. You customize the operation of *Professional II/PLUS* to the rigorous demands of your production neural network development.

Inter-platform compatibility. ™ Not only does NeuralWare support a wide range of development environments, data files and network files are fully interchangeable between them. This lets work groups in non-homogeneous computing environments transparently share data and network files.

Flexible Architecture. ™ You can customize the network architectures, develop training procedures, and substantially customize the operation of *NeuralWorks Professional II/PLUS* through the InstaNet IDL language. This is a built-in text-based scripting capability, which can be used to architect a variety of neural network architectures and features.

The NeuralWare Advantage

NeuralWorks Professional II/PLUS is the only neural network development tool backed with these advantages:

Multi-platform support. NeuralWorks *Professional II/PLUS* currently runs on Sun Workstations, Pentium & Celeron Class PC's, Hewlett Packard, IBM, Silicon Graphics and more. We support all current Windows Operating Systems, Solaris, Linux and other operating Systems. Contact NeuralWare for the latest hardware and software platform offerings. No matter what mix of hardware you have, or which platforms you pick in the future, *NeuralWorks Professional II/ PLUS* is the obvious choice.

Powerful options. Designer Pack allows you to go beyond the capabilities of FlashCode, by creating ANSI standard C code routines that incorporate all of the functionality of your networks, including the ability to learn. *User-Defined Neuro-Dynamics* allow you to modify the basic building blocks of a neural network so that you can modify existing architectures or create your own custom networks. (NOTE: These are available as separate products from NeuralWare.)

Extensive training. When you buy *Professional II/PLUS,* you have the confidence of knowing that NeuralWare backs it up with training courses geared to your needs. Whether you are new to neural computing, looking for application specific insights, or advanced design, NeuralWare provides the training you need.

Superior support. NeuralWare's support staff sets the standard for excellence in the field and has consistently achieved the highest marks from customers.

Award winning documentation. Over 1,000 pages of documentation address the whole range of needs. A tutorial helps you get started quickly. An in-depth reference book on neural computing is used as a textbook in universities. A functionally organized user's guide provides in-depth technical information. Repeatedly, these documents have won awards for excellence from the Society for Technical Communication.

Supported Platforms

Intel® x86 Architecture
   Windows 2000/Vista/7/8
   Pentium class or later processor
   2 GB memory, 10MB disk

   Linux (Red Hat)
   Pentium class or later processor
   2 GB memory, 10MB disk

Additional platforms are available. Contact NeuralWare for details.

Order Today

Get the *NeuralWorks Professional* advantage. Call NeuralWare today at (412) 278-6288, FAX at (412) 278-6289 or email sales@neuralware.com to order your copy of *NeuralWorks Professional II/PLUS.*

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