



IEEE Toronto Section

serving members and the community since 1903



IEEE Toronto - Neural Network Society Chapter

Volume 1, Issue 1

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IEEE Neural Network Society

On February 17, 2002, the IEEE Neural Networks Council (NNC), publisher of the IEEE Transactions on Neural Networks (TNN), the IEEE Transactions on Fuzzy Systems (TFS), and the IEEE Transactions on Evolutionary Computation (TEC), became the IEEE Neural Networks Society (NNS). Information about the society can be found at <http://iee-nns.org/>.

"The field of interest of the Society and its activities and programs shall be the theory, design, application and development of biologically and linguistically motivated computational paradigms emphasizing neural networks, including connectionist systems, genetic algorithms, evolutionary programming, fuzzy systems, and hybrid intelligent systems in which these paradigms are contained." (<http://iee-nns.org/general/>)

Establishing an IEEE Toronto Neural Network Society Chapter

To better serve its members, IEEE Toronto wants to establish a local chapter of the Neural Network Society. An organization meeting is an essential part of the process leading to establishing this chapter. As per IEEE rules & regulations, "A petition, signed by not less than twelve (12) Section members, above Student grade, who are members of the Society, shall be submitted to the Section Executive Committee, via the Section Secretary, for approval. It is suggested that more than the specified amount of names and signatures be included to ensure that all petitioners qualify, thus speeding the petition's processing."

A first meeting of this society chapter is organized for April 29, 2003

You Are Invited...

To attend this first meeting of IEEE Toronto Neural Network Society Chapter. We will:

- Have dinner together
- Get to know each other
- Exchange notes on the state of this discipline within the boundaries of the Toronto Section of the IEEE
- Discuss which activities we would like to have in Toronto
- Sign the petition for the establishment of the local Society Chapter
- Attend an interesting talk by Dr Talib Janabi on "ideX: Fuzzy Knowledge Base Generation and Tuning System" (details on page 2 of this newsletter).

If You Cannot Attend...

Please, sign and fax or email a scanned version of the enclosed petition to:

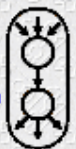
Bruno Di Stefano

416-925-7288

b.distefano@ieee.org



IEEE/NNS





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IEEE Toronto Neural Networks Society Chapter First Meeting

Speaker: Dr. Talib Janabi
Title: "ideX: Fuzzy Knowledge Base Generation and Tuning System"
Date: Tuesday, April 29, 2003
Time: 6:30 pm - 9:30 pm
Location: University of Toronto
Room: 4287, Bahen Centre
40 St. George Street
Toronto, Ontario

Bahen Centre for Information Technology is very close to the intersection of College Street with St. George Street. The Bahen Centre is labelled as (BA) on the on-line campus map and pdf printable version available at <http://www.osm.utoronto.ca/map/> and at <http://www.osm.utoronto.ca/map/>.

Admission Is Free

Refreshments

Refreshments will be served in the form of pizza and/or other suitable food, soft drinks, etc.

Reservation is Required!

As refreshments will be provided, it is required that a reservation be made so that no food will be wasted. Please, e-mail your reservation to Bruno Di Stefano, b.distefano@ieee.org

Topic Outline:

- The problem of fuzzy KB generation and tuning
- ideX: Software system developed by Xiera Technologies Inc.
- Components of ideX
- How to use ideX

Dr. Talib Janabi

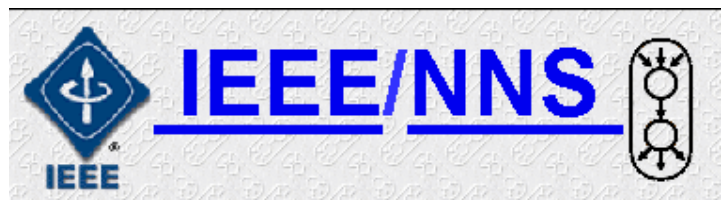
Holds a Ph.D. in Control and System Engineering, an M.Sc. Automatic Control Engineering, and a B.Sc. in Electrical Engineering. He is a member of:

- The New York Academy of Science
- The American Association for the Advancement of Science
- Professional Engineers of Ontario (Canada)
- IEEE
- Instrument Society of America (ISA)

Dr. Janabi has 26 years of experience in:

- Artificial intelligence and expert systems design and development
- Fuzzy Logic
- Product Design
- Research and teaching
- Industrial Control

Dr. Janabi's areas of expertise include: Artificial intelligence, expert systems, human-machine interface; cognitive systems, control systems, fuzzy logic, knowledge-base; generation and tuning, robotics, neural network, pattern recognition; inductive and machine learning, Chaos, modeling and simulation, linear; and nonlinear systems, industrial and process control, instrumentation; and product development.





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Xiera Technologies Inc. has provided the following information to IEEE Toronto. This material is presented here as a service to IEEE members, to complement the talk offered by Dr. Talib Janabi.

The fact that this information is distributed to IEEE members is not to be construed as an IEEE endorsement or an advertisement of Xiera Technologies Inc or of its products.

Xiera Technologies Inc.

Technologies:

Xiera Technologies Inc. has successfully developed the following technologies:

- Several fuzzy logic inference engine designs characterized by superior performance, high speed response, small memory requirement and new functionality.
- Automatic knowledge-base generation and tuning to optimize intelligent and fuzzy logic systems performance.
- Neuro -Mathematical modeling of large industrial and commercial systems.

Products:

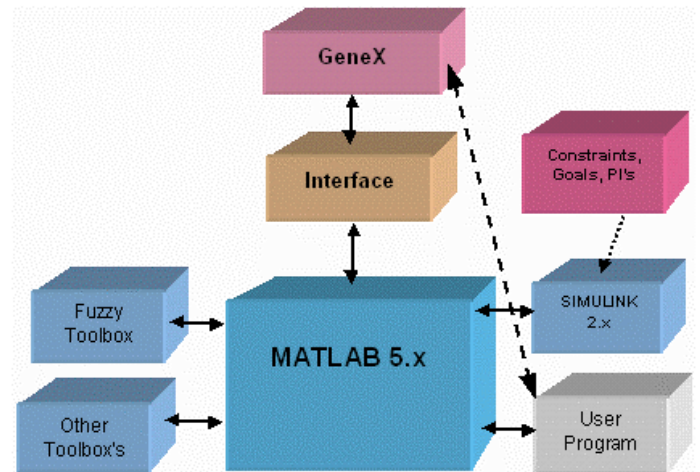
Xiera Technologies Inc. has successfully developed two products: GeneX and ideX. These are intelligent software products for:

- Fuzzy knowledge-base generation and tuning.
- Tuning of PID, non-linear controllers, high order controllers, gains, scaling factors, nonlinear elements etc.
- Supports multiple fuzzy controller tuning.
- Single and multiple objective optimization.
- Global system optimization
- Modeling and Identification:
 - ⇒ Discrete models (Difference Equations).
 - ⇒ Continuous Models (Transfer Functions) from time domain input/output data. This is a unique capability.

GeneX:

GeneX is an add-on package to MATLAB. It has been seamlessly interfaced to MATLAB, SIMULINK and the Fuzzy Toolbox. Users do not feel they are working with a different system. GeneX employs drag-and-drop icons on a

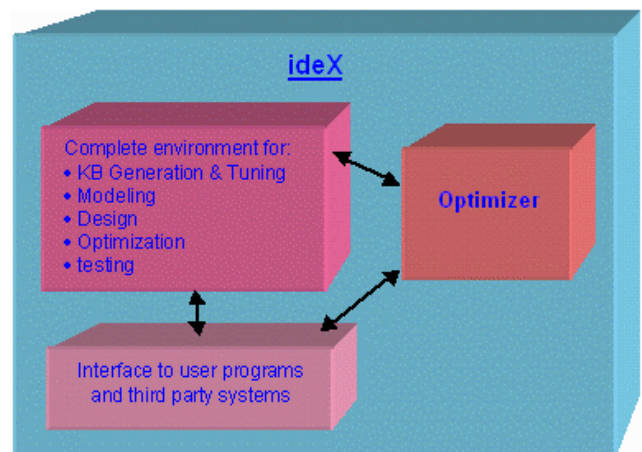
special palette which the user can call from the main menu of the workspace.



ideX:

ideX is Xiera's advanced Integrated Development Environment which provides users with the following powerful design facilities and capabilities, all in one stand alone system:

- Dynamical system simulator
- Fuzzy Toolkit
- Knowledge base generation and tuning
- Process modeling using input/output data



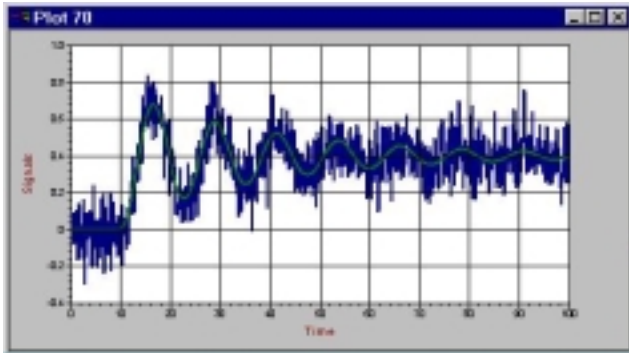


Modeling Example:

Oscillatory Process (3rd order) with time delay and high noise:

Process $G(s) = 1/(s^3 + 2s^2 + 0.4s + 0.5)$, Time delay: 10

Model $G(s) = 1/(2.42s^3 + 2.28s^2 + 0.764s + 0.548)$, Time delay: 9.44



Fuzzy Controller Tuning Examples:

Unstable Oscillatory Process: Third Order System with Free Integrator:

Process $G(s) = 10/(s^3 + 4s^2 + 4s)$

