Reports for ProgPrakt II

Visualization of netJEN problem domains and results

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1 1st. Protocol March 15, 2000

General

- *Present persons:*
  - DI Mag. Roland Schwaiger
  - Erich Eichberger
  - Thomas Aschauer
  - Thorsten Engl
  - Christian Zödl
- *Place:* DI Mag. Schwaigers Office
- *Time:* 16.00 - 16.30
- *Chief of protocol:* Erich Eichberger

General project definition

Theme: Visualisation of netGEN problem domains and results

The project is going to be a graphical tool, written in java, for the visualisation of netGEN problem domains. The aim is to show the pattern file[1] before and after netGEN evaluated it (they are called learning and result pattern). The pattern files are in the pattern file format of the SNNS [2]. Thus the program has to be able to read this files and display the information contained in a manner that depends on the problem domain. This, perhaps, could be an image from a satellite that should be classified or prognosis of tax courses.

Topics talked about

- Administrative details
- Sources for Information related to the topic

[1]The data neural network simulators work with is called pattern
[2]Stuttgart Neural Network Simulator

- Presentation of our group's web site
- The Neural Network Simulator netGEN and SNNS
- Problem domains, kinds of visualisation

task list

- Pictures of group-members (for web site)
- Find problem domains for NNs [3]
- Find NN-applications and problems that are solved with NNs

[3] NN… short form of Neural Network

2 Results of the week (March 15th to March 22nd)

The goal of this week was to find the applications and problem domains of NNs. First we discuss the NN-Applications we found, and then we list the problem domains we found within these applications.

Applications for NNs

Manufacturing

- process optimizing
- process monitoring and controlling
- determining operational policies
- predictive control of quality
- flexible manufacturing scheduling

Chemical Industry

- sensor analysis
- spectroscopy
- molecular modeling
- data rectification for dynamic processes
- process modeling for fault detection
- statistical analysis

Medicine

- diagnosis of coronary artery disease
- structure analysis of virus proteins
- diagnosis of epilepsy

- rehabilitation of persons with incomplete spinal cord injury
- analysis and classification of EEG signals

Nuclear engineering

- spectral analysis
- signal prediction in nuclear power plants
- classification of energy levels
- alarm handling in nuclear power plants

Miscellaneous applications

- classification of satellite pictures
- sensor analysis
- optical character recognition
- voice recognition
- stock rate prognosis
- texture recognition
- temperature regulation
- sunspot evaluation
- business prognosis and optimization
- sale prognosis

Problem domains

- classification
- time series prediction
- parameter determination
- signal recognition
- signal analysis and prediction
- rule extraction
- optimization
- modeling

Ideas for possible visualisation

- picture data as bitmap
- classification as regions (graphs)
- bar chart
- line chart
- plain pattern text
- graphs
- text