Poster E2

FINDS – Integrative Services

Caslav Bozic
Detlef Seese

Institute of Applied Informatics and Formal Description Methods (AIFB)

The amount of financial data available, consisting of data on previous trades as well as news stories, makes it impossible for a human trader to process it in whole. The Financial News and Data Service (FINDS) project has a goal of creating a state-of-the-art services that would help traders in making trade decisions by filtering important news releases, suggesting buy-sell decisions and allowing creation of subjective connections within the data.
Integrative services provide modeling of nonlinear relations between data, finding complex patterns that allow better prediction of market developments, and facilitating definition of personal integral view on data with the user's own combination of base services.
The concepts are presented using the example of one year of data on one company. The input for the integrative framework consists of news data preprocessed using OpenCalais' semantic tagging, and the quantitative data aggregated to the level of each minute.
The data is used for training deep multilayer neural network. This provides a new fast technique of learning nonlinear features in neural networks with several thousands of neurons. The output of the network should be a prediction of the main financial parameters that would help and support the trader in trading decisions.

Karlsruhe Institute of Technology

Institute of Applied Informatics and Formal Description Methods
Information Management and Market Engineering Graduate School

AIFB

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FINDS – Integrative Services

Financial News and Data Service

Amount of data on previous trades and financial news stories makes it hard for a human trader to process it in whole

Goals:
defining the personal integral view on clean data in standardized form and with relevant information annotated
allowing creation of user's own combination of base services
creating an environment for collaboration and sharing of individual conclusions

- Qualitative data:
  - Every trade from all major exchanges
  - best bid and ask from most
  - order book for some
- News data:
  - Reuters News Wire
  - Dow Jones Wire Service
  - Breaking Views

Data Integration

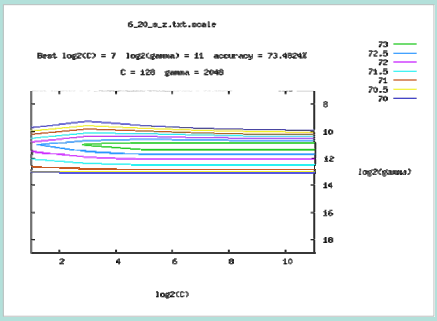
WASHINGTON - For Microsoft Corp. <MSFT.O.>, an unusual U.S. appeals court hearing next week could bring the most ignominious chapter in the company's storied history to a close.

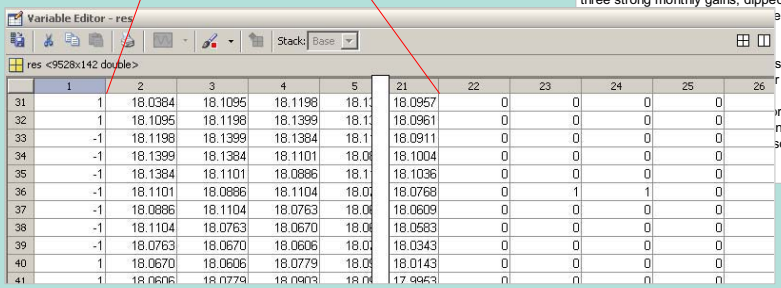
WASHINGTON, Nov 1 (Reuters) - The Washington Post included the following items on the front page of its business section on Nov. 1:

NEW YORK - Six months after securities regulators and 10 of Wall Street's biggest banks signed a landmark $1.4 billion conflict-of-interest settlement, a federal judge approved the deal Friday, clearing the way for harmed investors to recoup $399 million.

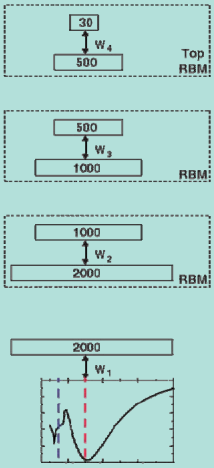
WASHINGTON - The WorldCom Inc. <MCWEQ.PK> <WCOEQ.PK> reorganization plan approved yesterday eliminated $35 billion in debt from the company's balance sheet, but the telecommunications giant still faces a huge challenge in reversing a steep revenue decline while operating in an increasingly competitive industry.

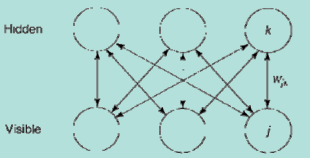
WASHINGTON - Personal income rose a modest 0.3 percent in September, and consumer spending, after three strong monthly gains, dipped by the same 0.3





Forecasting





$$\Delta w_{ij} = \varepsilon(\langle v_i h_j \rangle_{data} - \langle v_i h_j \rangle_{recon})$$

$$p(h_j = 1) = \sigma(b_j + \sum_i v_i w_{ij})$$

$$p(v_i = 1) = \sigma(b_i + \sum_j h_j w_{ij})$$

Neural Network

Service for suggesting sell/buy decisions
- using Support Vector Machines
- for short term intraday returns forecasting

News stories as additional input:
- textual data annotated using OpenCalais
- semantic data transformed to numerical
- used with quantitative data for training SVM

Using Deep Multilayer Neural Network
composed of stacked layers of
Restricted Boltzmann Machines (RBMs)
for modeling of nonlinear relations
and finding complex patterns in data
we plan to provide better forecast
of market development

Časlav Božić caslav.bozic@aifb.uni-karlsruhe.de

Institute AIFB, Complexity Management (Prof. Dr. Detlef Seese), IME Graduate School