

# Workshop on Neural Networks Application in Astroparticle Physics and Industry

August 6-11, 2000  
*Nor-Amberd, Armenia*

## International Advisory Committee

Prof. A. Chilingarian (Armenia)  
Prof. H. Gemmeke (Germany)  
Prof. C. Lucas (Iran)

## Local Organizing Committee

Mr. A. Derdzakian  
Dr. V. Ivanov  
Mr. A. Hovhannisian  
Dr. A. Vardanian  
Mr. H. Vardanian  
Mr. A. Yessin

## Agenda

### August 7

Topics:

- Decision Support Systems
- Uncertainty Modeling and Financial Forecasting
- Industrial applications

Session Chair: Prof. Lucas

### August 8

Topics:

- Neural methods in Extensive Air Shower data analysis
- Forecasting of the severe radiation storm using cosmic ray intensity time-series.

Session Chair: Prof. Chilingarian

### August 9

- Evolutionary Strategies for Neural Net Training
- Neural Hardware
- Hybrid hard-software system\*
- Fast intelligent trigger applications

Session Chair: Prof. Gemmeke.

## **Evening round-table sessions\*\***

### **August 10**

- Net training strategies
- Theoretical foundations of NN methods

### **August 11**

- Applied aspects of Neural Information technologies

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NB:

\* Special session devoted to the exhibition of products/software associated with the research work.

\*\*Sessions will be held after sightseeing trips

## **Presentations**

### **August 7**

- Neural Decision Support System for Tehran Stock Exchange, Dr. Caro Lucas
- Identification of Phosphorus Esters by Neural Network, Dr. Shahin Rouhani
- Cognitive Action Selection with Neurocontrollers, Dr. Caro Lucas
- Sparse Temporal Pattern Generation in Syn-Fire Chain, Mr. Ehsan Arabzadeh

### **August 8**

- Some Results and Comparisons of Astroparticle Data Analysis, Ashot Chilingarian
- EAS Analysis on Event by Event Basis, Dr. Ararat Vardanian
- ANI Software Package in Forecasting of Extreme Geomagnetic and Radiation Storms, Mr. Nerses Gevorgyan
- Demonstration of ANI Package with SAND1 hardware accelerator

### **August 9**

- Statistical learning algorithms, Dr. Hartmut Gemmeke

- Scalable Control Systems based on SW-Components, Dr. Wolfgang Eppler
- Comparison of Different Net Training Strategies, Dr. Ararat Vardanyan
- PLN Pruning, Dr. Wolfgang Eppler
- Evolutionary algorithms, Mr. S. Chilingarian

## **Participants (by countries in alphabetical order)**

- Dr. Ashot Chilingarian, Armenia (Cosmic Ray Division, Yerevan Physics Institute)
- Mr. Suren Chilingarian, Armenia (Cosmic Ray Division, Yerevan Physics Institute)
- Mr. Nerses Gevorgian, Armenia (Cosmic Ray Division, Yerevan Physics Institute)
- Dr. Vitali Ivanov, Armenia (Cosmic Ray Division, Yerevan Physics Institute)
- Dr. Samvel Ter-Antonian, Armenia (Cosmic Ray Division, Yerevan Physics Institute)
- Dr. Ararat Vardanyan, Armenia (Cosmic Ray Division, Yerevan Physics Institute)
- Mr. Hovhannes Vardanian, Armenia (Cosmic Ray Division, Yerevan Physics Institute)
- Dr. Wolfgang Eppler, Germany (Forschungszentrum Karlsruhe)
- Dr. Hartmut Gemmeke, Germany (Forschungszentrum Karlsruhe)
- Dr. Hossein Abbassian, Iran
- Mr. Majid Arabgol, Iran
- Mr. Ehsan Arabzadeh
- Mr. Farhad Imanfard, Iran
- Ms. Shahin Khalilpoor, Iran
- Dr. Caro Lucas, Iran
- Dr. Shahin Rouhani, Iran
- Mr. Arash Tonok Shekarnia, Iran
- Mr. Ruben Ter-Antonian, U.S.A.
- Ms. Anahid Dian Yeremian, U.S.A. (Stanford Linear Accelerator Center)