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Engineering Continuing Education, GG-13

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Seattle, WA 98195

University of Washington

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Introduction to Artificial Neural Systems

September 15–16, 1988 Sponsored by College of Engineering University of Washington, Seattle

Instructors

Les E. Atlas is an Associate Professor of Electrical Engineering at the University of Washington. His research interests include speech processing, additory system processing and real time signal processor design. Dr. Atlas was recently involved in the restoration of voice transmissions from Korean Air flight 007. His work in neural networks is supported by a National Science Foundation Presidential Young Investigator's Award and, more recently, by the Washington Technology Center.

Robert J. Marks II is a Professor of Electrical Engineering at the University of Washington. He has published over fifty archival journal papers in the areas of optical computing, detection theory, signal analysis and processing, and neural computing. Dr. Marks is a Senior Member of IEEE and, in 1984, was awarded IEEE's Centennial Medal. He is currently Chair of the Neural Systems and Applications Technical Committee for the IEEE Circuits and Systems Society. His research in neural networks is supported in part by a grant from the SDI/IST's program in ultra-high speed computing and by the Washington Technology Center.

Introduction to Artificial Neural Systems.

September 15-16, 1988

Course Contents_

Technical

- Biological foundation of neural networks
- Neural network autoassociative memories
- Bidirectional associative memories
- Supervised and unsupervised learning
- Signal space interpretations
- Fault tolerance in neural networks
- Synchronous vs. asynchronous operation
- Hierarchical neural networks
- · Network design based on energy reduction
- Error back propagation

Industrial

- The impact of neural networks on:
- -future technology
- -academic and government research
- -industry

Simulations

 Hands-on graphical neural net simulations

 Other current research in neural networks including a bibliography of historic and recent artificial neural network publications

Each participant will be given a

package

neural network simulation program

Who Should Attend_

This short course is appropriate for engineers, computer scientists, and technical managers who would like to understand the theory of artificial neural systems and are interested in applying this technology to real world problems.

Temporal pattern learning

Hebbian learning

Signal classification networks

University of Washington, Seattle

- Pattern extrapolation
- Image reconstruction
- Adaptive resonance theory
- Performance comparisons
- Silicon implementation of neural networks
- Optical implementation of neural networks
- Neural network storage capacity
- Search algorithms

which are based loosely on biological neural networks. These artificial neural networks have been implemented successfully both electronically and optically.

network architectures for several different applications will also be discussed. Interdisciplinary contributions to recent results in artificial neural network research will be stressed.

Applications of artificial neural networks include signal classification, image recognition, speech personal copy of a neural network simulation software package.

course. This videotape will be available for purchase from Engineering Continuing Education.

The course will be held at the University of Washington campus. Exact location (building and room number) will be printed on your confirmation letter.

The registration fee for this course is \$475.00 if received before September 8 and \$495.00 after that date. It includes all course materials, one floppy disk, lunch each day, and refreshment breaks. Full refund will be given up to five working days prior to the course. After that, a \$25.00 handling fee will be deducted from your refund. The University is not responsible for any cancellation/change charges assessed by airlines or travel agencies.

No on-campus housing is available. However, a list of hotels and motels within walking distance of the campus will be sent upon request. Check the appropriate line on the registration form below. Participants are encouraged to use public transportation whenever feasible. Bus information may be obtained from Metro Transit at (206) 447-4800. Campus parking is available at an additional cost of \$3.00

per day paid at any University entrance.

Course Registration Form

Introduction to Artificial N September 15–16, 1988

Please fill out this form completely to enro

Name___

Affiliation

Company Address

Home Address_ Send my confirmation to Dhome

Payment Method:

Check enclosed payable to the University of Washington.

Purchase order attached: please invoice my company.

Bill my (circle one): VISA MasterCard

Acct. #_____

Signature on card_____

Yes, send me a list of local hotels and motels.

Mail form with payment to: Engineering Continuing Education, 4725 30th Ave. NE, University of Washington, GG-13, Seattle, WA 98195. For more information, call (206) 543-5539.

General Information

- Researchers in computing and signal processing have long been intrigued by the computational and fault tolerant properties of the brain. There has recently been a surge of interest in processing architectures
- Participants in this course will learn the theoretical underpinnings of artificial neural networks and will be presented with the most relevant recent research results. Case studies of the suitability of neural
- recognition and optimization. Electronic, optical and hybrid implementations of neural networks will be discussed. There will be in-class computer simulations of neural networks. Participants will be given a
 - An educational videotape will be made of the instructor (the audience will not be filmed) during this

Location

Registration Information

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	after September 8	\$495.00

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Exp. Date____

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