

## PUBLICATIONS

- Bankman, I. N., Sadowsky, J., and Sigillito, V. G., "A Neural Network for Generating Diverse Decision Boundaries with a Minimal Number of Parameters," in *Proc. 14th Ann. Int. Conf. of IEEE Eng. in Medicine & Biology Soc.*, Washington, D.C., pp. 1039-1041 (Oct 1992).
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## PRESENTATIONS

- Bankman, I. N., "Neural Waveform Analysis," Biomedical Engineering Research, George Washington Univ. (7 Nov 1993).
- Benson, R. C., Phillips, T. E., Barger, C. B., Romensko, B. M., and Uy, O. M., "Electromigration of Silver in Low-Moisture Hybrids," Int. Society for Hybrid Microelectronics, Dallas, Tex. (9-11 Nov 1993).
- Blum, B. I., "Software Quality and M Technology," Seminar, Italian National Research Council, Milan, Italy (3 Sep 1992).
- \_\_\_\_\_, "A Bridge Technology for Legacy Systems," The Challenge of Legacy Information Systems, Como, Italy (4 Sep 1993).
- \_\_\_\_\_, "The Evolution of Software Engineering," Seminar, ITESM, Monterrey, Mexico (18 Oct 1993).
- \_\_\_\_\_, "The Evolving Role of Computers in Medicine," Seminar, Hospital San Jose, Monterrey, Mexico (18 Oct 1993).

- Krimigis, S. M., "Interview on NEAR," Interview with Liz Tucci from *Space News*, APL, Laurel, Md. (22 Sep 1993).
- , "NEAR Mission and Science," NEAR Press Conf. with Senator Mikulski, APL, Laurel, Md. (15 Dec 1993).
- Mehlman, W. F. (APL), Marshall, A. C. (Sandia National Lab.), and Kompanietz, G. (Kurchatov Inst., Moscow), "Integrated Safety Program for the Nuclear Electric Propulsion Space Test Program," 12th Symp. on Space Nuclear Power and Propulsion, Albuquerque, N.M. (8–12 Jan 1994).
- Nelson, J. B., "Genetic Algorithms as a Subsumption of Sharpened Random Search," Mid-Atlantic Regional Prob. & Statistics Day, USFDA, Rockville, Md. (6 Nov 1993).
- Rapport, I. D., "Multi-Objective At-Sea Testing," 1993 ITEA Int. Symp.: T&E—Two Years After the Soviet Union, Westlake Village, Calif. (1–3 Dec 1993).
- Wozniak, J. J., Ecker, J. A., and Hildebrand, R. J. (APL), and Brill, W. (Chesapeake Automotive Enterprises), "Advanced Natural Gas Vehicle (ANGV) Status," ANGV Status Meeting, APL, Laurel, Md. (16 Nov 1993).
- Urban, T. J., "Robust Missile Guidance Filtering," SAE Aerospace Control and Guidance System Committee, Reno, Nev. (10 Mar 1993).
- Yost, D. J. (APL), and Yost, M. J. (TEEPACK), "A Role for Control Technology in the Process Industries," SAE Aerospace Control and Guidance System Committee, Reno, Nev. (10 Mar 1993).

The following papers were presented at the 2nd Symp. on Research and Development at APL, JHU/APL, Laurel, Md. (2–3 Nov 1993):

- Aamodt, L. C., "Temperature Profiles in Weakly Absorbing Biological (or Other) Materials During Irradiation."
- Ecelberger, S. A., Kistenmacher, T. J., and Bryden, W. A., "ECR Plasma-Assisted Reactive Magnetron Sputtering."
- Miragliotta, J., "Phase Coherent, Optical Magnetometer Using a Solid-State Sensor Element."
- Nelson, J. B., "A Simple Cousin of Genetic Algorithms for Optimizing Likelihood Functions."
- Osiander, R., Spicer, J. W. M., and Murphy, J. C., "Thermal Imaging of Subsurface Microwave Absorbers in Dielectric Materials."
- Roberts, J. C., Ecker, J. A., and Biermann, P. J., "The Design of Mechanically Compatible Fasteners for Human Mandible Reconstruction."

The following papers were presented at the Fall Meeting of the American Geophysical Union, San Francisco, Calif. (6–10 Dec 1993):

- Anagnostopoulos, G. C., Sarris, E. T., Rigas, A. G. (Univ. Thrace, Greece), Krimigis, S. M. (APL), and Armstrong, T. P. (Univ. Kansas), "Statistical Results of the Energy Extent and Velocity Dispersion of Intense Upstream Ion Events."

- Armstrong, T. P., and Haggerty, D. (Univ. Kansas), Lanzerotti, L. J., and MacLennan, C. (AT&T Bell Lab.), Forsythe, R., and Balogh, A. (Blackett Lab., London), and Roelof, E. C., Gold, R., and Krimigis, S. M. (APL), "Observation at Ulysses of a Spectrally-Peaked, Magnetic-Field-Aligned, 0.1 to 1 MeV Ion Event at 4.6 AU and 36° South Heliographic Latitude."
- Goodrich, C. C. (Univ. Maryland), Lyon, J. (Dartmouth), and McNutt, R. L., Jr. (APL), "MHD Model of Neptune's Magnetosphere and Its Interaction with the Solar Wind."
- Krimigis, S. M., and Cheng, A. F., "Near-Earth Asteroid Rendezvous Mission: Science Overview."
- McNutt, R. L., Jr. (APL), and Lazarus, A. J., and Belcher, J. W. (MIT & CSR), "Distance to the Heliopause from the VLF Heliospheric Emissions."
- Paschalidis, N., Sarris, E. T., Anagnostopoulos, G. C., Raptis, S., and Kaliabetsos, G. (Univ. Thrace, Greece), and Krimigis, S. M., and Sibeck, D. G. (APL), "Observations of Forward Velocity Dispersion in the Upstream Event of Nov. 1, 1984."
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## COLLOQUIA

- 7 Jan 1994: "Motion Sickness: Stomach and Hormone Responses During Nausea," K. L. Koch, Hershey Medical Center, Penn. State Univ.
- 14 Jan: "New Approaches to the Diagnosis and Treatment of Breast Cancer," F. P. Kuhajda, JHU.
- 21 Jan: "Biological Applications of Mass Spectrometry," C. C. Fenselau, University of Maryland Baltimore County.
- 4 Feb: "Formation of Mixed Oxide Powders in Flames: Processes, Products and Industrial Applications," J. L. Katz, JHU.
- 18 Feb: "Fractal Image Compression for Pattern Recognition," A. D. Sloan, Iterated Systems, Inc.
- 25 Feb: "Fermat's Last Theorem," L. Washington, University of Maryland College Park.
- 4 Mar: "Tackling the Diagnostic Dilemmas of Prostate Cancer by Molecular Approaches," G. R. Pasternack, JHU.
- 11 Mar: "Chaos in Newton's Clock: The Historical Origins of Chaos Theory," I. Peterson, *Science News*.
- 18 Mar: "Self-Similarity of Fractals and Turbulent Flows," C. V. Meneveau, JHU.

## U. S. PATENTS (1993)

- J. A. Krill, W. A. Huting, and E. P. Irzinski, *Matched Spurious Mode Attenuator and Transition for Circular Overmoded Waveguide*, No. 5,202,650, Apr 13:

A mode suppressor structure designed to maintain TE<sub>01</sub> mode and matching in an overmoded waveguide, while at the same time allowing efficient coupling of unwanted modes for dissipation in the mode filtering structure of the overmoded waveguide, and in a manner which is non-intrusive on the TE<sub>01</sub> mode and thus promotes high power operation.

- K. A. Boahen, A. G. Andreou, P. O. Pouliquen, and R. E. Jenkins, *Current-Mode Based Analog Circuits for Synthetic Neural Systems*, No. 5,206,541, Apr 27:

A two transistor current-controlled current conveyor (C4) circuit is disclosed which exploits the translinear properties of the MOS transistor in subthreshold and uses unidirectional current signals. Two C4 circuits connected to and communicating through a bidirectional junction circuit of the invention permit the transmission of independent, bidirectional signals. The circuits are useful for implementing synthetic neural systems.

- F. S. Billig and D. M. VanWie, *Translating Cowl Inlet with Retractable Propellant Injection Struts*, No. 5,214,914, Jun 1:

An inlet system for a variable geometry transatmospheric air breathing engine is disclosed. It incorporates a rotatably translatable cowl provided with a rotating lip used in combination with insertable and propellant injection struts.

- R. S. Potember, S. Yamaguchi, and C. A. Viands, *Electron Density Storage Device Using a STM*, No. 5,216,661, Jun 1:

The invention provides for very high density information storage on an organometallic DCNQI charge transfer data storage medium. The medium is switched from one state to another through the application of an electric field to the medium by the probe tip of a scanning tunneling microscope resulting in an observable change in the electron density of the surface of the medium.

- J. L. Keirse and D. H. Sheppard, *Variable-Cycle Storable Reactants Engine*, No. 5,224,344, Jul 6:

A variable-cycle storable fuels engine having three cycles is provided. The engine operates as an air-augmented rocket from launch to approximately Mach 3. From approximately Mach 3 to Mach 8, the engine operates as a dual mode ramjet/scramjet to altitudes exceeding 100,000 feet. Thereafter, the engine operates as a conventional pure rocket for final sub-orbital boost. A fixed geometry air inlet provides improved ram recovery at altitudes below 100,000 feet.

- J. D. Franson, *Apparatus and Method for Quantum Mechanical Encryption for the Transmission of Secure Communications*, No. 5,243,649, Sep 7:

An apparatus and method that permit the transmission of secure communications. The invention uses quantum mechanical effects to establish nonlocal correlations between a pair of photons. This is analogous to an automatic encryption code that exists at only one location and is immediately destroyed after either of the photons is detected. This latter feature also provides a means for detecting any unauthorized tap on the transmission line.

J. R. Dettmer, *Accumulating Arithmetic Memory Integrated Circuit*, No. 5,245,562, Sep 14:

An accumulating arithmetic memory (AAM) integrated circuit or AAM chip that includes a set of accumulators or registers. Once an accumulator is selected, e.g., by using a look up table, a multiplexer retrieves the data from the selected accumu-

lator. Then, as input data is presented to the AAM chip, an adder adds, subtracts, or multiplies the input data with the data retrieved from the selected accumulator. The resulting output is returned to the originally selected accumulator.

R. A. Steinberg, *Multi-Resolution Spatial Integration Signal Processor and Method*, No. 5,257,121, Oct 26:

A signal processor and method for maximizing the detection range of imaging infrared seekers against ship targets. The invention comprises a bank of two-dimensional spatial filters, having rectangular kernels matched to targets to various aspect ratios and sizes, implemented in a separable form that is well suited to processing in real-time image data acquired sequentially by column.