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 Lee, S. C., "Using a Translation-Invariant Network to Recognize Time Series," Symp. on Neural Networks in Medicine, JHU/APL, Laurel, Md. (Apr 1989).
 Mark, F. F., Barger, C. B., and Duncan,

D. D. (APL), and Friedman, M. H. (OSU), "Studies of Flow through a Compliant Cast of Human Aortic Bifurcation," The 3rd Joint ASCE/ASME Mechanics Conf., Univ. Calif., San Diego, La Jolla, Calif. (9-12 Jul 1989).
 Norton, J. R., "Ultrastable Quartz Oscillator for Spacecraft," 21st Annual Precision Time and Time Interval Applications and Planning Meeting, Redondo Beach, Calif. (30 Nov 1989).
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 Shuster, M. D., "Fads and Fallacies in Spacecraft Alignment Estimation," Int. Symp. on Space Mechanics, Toulouse, France (6-10 Nov 1989).
 Shuster, M. D., "Inflight Estimation of Spacecraft Sensor Alignment," 13th AAS Guidance and Control Conf., Keystone, Colo. (3-7 Feb 1990).
 Shuster, M. D., and Fisher, H. L. (APL), and Musser, K. L. (Univ. Maryland), "Very Coarse Attitude Determination of the Thrusted-Vector Mission," AAS/AIAA Astrodynamics Conf., Stowe, Vt. (7-10 Aug 1989).
 Spall, J. C., "Bayesian Error Isolation for Large-Dimensional Statistical Models," University of Chicago, School of Business (Dept. of Econometrics) Seminar Series, Chicago (8 Nov 1989).
 Thompson, D. R., Gotwals, B. L., and Stenner, R. E., II, (APL), and Keller, W.C. (NRL), "A Comparison of Ku-Band Doppler Measurements at 20° Incidence with Predictions from a Time-Dependent Composite Model," Int. Geosci. & Remote Sensing Symp., Vancouver, B.C., Canada (10-14 Jul 1989).
 Tubbs, L. D., Chappell, R. G., and Cramblitt, R. M. (APL), and Moe, G. W. (Riverside Res. Inst.), "Radiometrically Calibrated Low-Light-Level TV Camera," Am. Defense Preparedness Association Meeting, JHU/APL, Laurel, Md. (9-12 Oct 1989).
 Weintraub, D. M., "Why Would You Use APL2?" Colloquium, Hopkins Space Telescope Institute, Baltimore (28 Aug 1989).

The following papers were presented at the 2nd Int. Symp. on Ocular Circulation and Neovascularization, Wilmer Institute, Baltimore (25-28 Sep 1989):

Flower, R. W., and Klein, G. J. (APL), and Baumgartner, R. H. (St. Gallen Eye Clinic, Switzerland), "Current Technology for Recording and Analyzing ICG Choroidal Angiograms."
 Flower, R. W., and Klein, G. J., "Measurement of Choroidal Blood Flow Parameters Using ICG Angiography."
 Klein, G. J., and Flower, R. W. (APL), and Baumgartner, R. H. (St. Gallen Eye Clinic, Switzerland), "Extraction of Dynamic Information from Choroidal Angiography."

PRESENTATIONS

Ahlbrand, S. D. (APL), and Saunders, D. M. (Arbor, Inc.), "The Use of Quality Charts in Customer-Driven Total Quality Improvement," AQP 6th Annual Fall Forum, Bal Harbour, Fla. (19 Oct 1989).
 Blum, B. I., "Considerations in Planning for Hospital Automation," University of Newcastle, Newcastle, Australia (18 Jul 1989).
 Blum, B. I., "The Benefits of Clinical Information Systems," Grand Rounds, Prince of Wales Hospital, University of New South Wales, Sydney, Australia (19 Jul 1989).
 Danchik, R. J., and Pryor, L. L., "Navy Navigation Satellite System Status," 1989 Int. Conf. of The Royal Institute of Navigation, London, England (17-19 Oct 1989).
 Ecker, J. A. (APL), and St. Ville, J. A. (JHMI), "Finite Element Analysis of a Human Total Hip Arthroplasty," JHU/APL Image Processing Seminar Series, Laurel, Md. (7 Dec 1989).
 Farrell, R. A., McCally, R. L., and Freund, D. E., "Probing the Structure of the Cornea of the Eye with Light Scattering," 1989 CRDEC Scientific Conf. on Observation and Aerosol Research, Edgewood Arsenal (27-30 Jun 1989).
 Fisher, H. L., Shuster, M. D., and Strikwerda, T. E., "Attitude Determination for the Star-Tracker Mission," AAS/AIAA Astrodynamics Conf., Stowe, Vt. (7-10 Aug 1989).
 Flower, R. W., Klein, G. J., and Baumgartner, R. H., "Consideration of Equipment Used for Recording and Analyzing ICG Choroidal Angiograms," 2nd Int. Symp. on the Choroid, Wolfsberg, Switzerland (30 Apr-3 May 1989).
 Flower, R. W., Klein, G. J., and Baumgartner, R. H., "Choroidal Vascular Dynamics

The following papers were presented at the 3rd DoD Symp. on Electromagnetic Windows, Huntsville, Ala. (14-19 Nov 1989):

- Duncan, D. D., Fischer, D. G., and Lange, C. H., "Scatter Characteristics of Crystalline and Polycrystalline Oxides."
Thomas, M. E., "Electromagnetic Properties of Dual Mode Materials for IR/RF Domes."
Thomas, M. E., and Tropf, W. J., "Extrinsic Absorption Features in Crystalline and Polycrystalline Oxides."

The following papers were presented at the Mid-Atlantic Regional Probability and Statistics Day, NIST, Gaithersburg, Md. (21 Oct 1989):

- Chin, D. C., "A Constrained Optimization Technique for a Multivariate Convex Function."
Hill, S. D., and Spall, J. C., "Approximate Noninformative Priors."
Maryak, J. L., and Asher, M. S., "Isolating Modeling Errors in the Parameters of State-Space Models."
Spall, J. C., "Effect of Imprecisely Known Nuisance Parameters on Estimate of State-Space Parameters."

COLLOQUIA

- 5 Jan 1990—"Effects of RF Radiation on the Primate Eye," H. A. Kues, APL.
12 Jan—"Computing Directions for the 1990s," W. J. Doherty, IBM Watson Research Laboratories.
19 Jan—"The Structure of Convection in the Earth's Mantle," P. L. Olson, The Johns Hopkins University.
26 Jan—"The Aharonov-Bohm Effect with Neutrons," S. A. Werner, University of Missouri, Columbia.
2 Feb—"Chaos in Classical and Quantum Systems: From Atoms to Asteroids," R. V. Jensen, Yale University.
9 Feb—"Superconductivity in a Very High Magnetic Field," Z. Tesanovic, The Johns Hopkins University.
16 Feb—"Modern Weather Prediction," J. J. Tribbia, National Center for Atmospheric Research.
23 Feb—"The Initial Cosmic Background Explorer (COBE) Results," N. W. Boggess, Goddard Space Flight Center.
2 Mar—"The Voyager Encounter with Neptune," E. C. Stone, California Institute of Technology.
9 Mar—"Scanning Tunneling Microscope Observations of Nonperiodic Crystals," A. R. Kortan, AT&T Bell Laboratories.
16 Mar—"The Atmospheres of the Outer Planets and Their Satellites," D. F. Strobel, The Johns Hopkins University.
23 Mar—"Active Global Experiments for Preserving the Ozone Layer," A. Y. Wong, University of California, Los Angeles.
30 Mar—"Clinical Treatment of Various Cancer Types by Means of Photodynamic Therapy," T. S. Mang, Roswell Park Memorial Institute.

U.S. PATENTS (1989)

B. F. Kim and J. Bohandy, *Image Classifier*, No. 4,799,270, 17 Jan:

A hierarchical and recursive computer system capable of classifying, identifying, and analyzing images. The speed at which the system recognizes particular images depends on the time interval from the last encounter, such that more frequently encountered images will be recognized more quickly.

R. E. Jenkins, D. G. Lee, Jr., R. C. Moore, and K. Strohhahn, *Cellular Logic Processor*, No. 4,805,228, 14 Feb:

A cellular logic operation processor for performing transformation, according to a controlled sequence, of the data points of a first matrix into a corresponding number of data points of a second matrix. The processor has application in areas such as scientific research, image analysis, and signal processing, where vast amounts of data are produced and must be analyzed.

R. H. Lapp, *Apparatus for Winding Wire onto an Arbor*, No. 4,809,918, 7 Mar:

A device for winding wire into helical turns about an arbor having a straight or curved center line, whereby each helical turn is nearly perpendicular to the center line of the arbor. The device was developed for use in fabricating helical overmoded waveguide but has other applications, such as winding a reinforcing wire on a high-pressure pipe.

H. W. Ko, *Non-Invasive Electromagnetic Technique for Monitoring Time-Trends of Physiological Changes at a Particular Location in the Brain*, No. 4,819,648, 11 Apr:

A method and apparatus for non-invasively sensing physiological changes in the brain by using an electromagnetic field to measure localized impedance changes in brain matter and fluids. The technique has particular application in providing time-trend measurements of the process of brain edema associated with head trauma.

R. A. Makofski, J. T. Massey, F. F. Marks, F. B. Weiskopf, Jr., W. H. Guier, P. C. Walsh, and F. F. Marshall, *Means and Method for the Non-Invasive Fragmentation of Body Concretions Having Means for Accurately Locating a Concretion*, No. 4,821,729, 18 Apr:

An ultrasonic transducer is used to locate a kidney stone or other body concretion and to control the positioning of a shock wave generator to focus the shock wave on the kidney stone. The ultrasonic transducer and the shock wave generator form an integral structure, with a common axial alignment. A second transducer means is provided to assist in determining the position of the ultrasonic transducer/shock wave generator structure relative to the body concretion.

A. L. Newman, *Optimized Capacitive Sensor for Chemical Analysis and Measurement*, No. 4,822,566, 18 Apr:

An apparatus for detecting the presence and/or measuring the concentration of an analyte in the fluid medium. The apparatus relies on biospecific binding between a biochemical binding system and the analyte to change the dielectric properties of a capacitive affinity sensor.

R. S. Potember and T. O. Poehler, *Multistate Optical Switching and Memory Apparatus Using an Amphoteric Organic Charge Transfer Material*, No. 4,825,408, 25 Apr:

An optical storage medium formed of organic charge transfer material that switches to one of a plurality of optically detectable states when illuminated by a controlled source of optical energy such as a laser. It is contemplated that by properly varying the intensity and duration of the illuminating beam, data can be written, read, and erased (multiple bits per each data storage spot) with a single laser source.

J. G. Parker, *Two-Band Optical Comparator for Use with Chopped CW Singlet Oxygen Monitor*, No. 4,827,938, 9 May:

Apparatus to improve the detection of the singlet oxygen emission produced during photoradiation therapy, and thereby better determine the effectiveness of the therapy.

R. C. Moore, *Apparatus for Categorizing and Accumulating Events*, No. 4,833,629, 23 May:

Digital signals that characterize the events of interest are input to the apparatus. By means of a look-up storage device having a plurality of individually addressable memory locations, the events are categorized and the counts of the various event types are accumulated at a high rate.

A. J. Cote, Jr., *Speech Waveform Analyzer and a Method to Display Phoneme Information*, No. 4,833,716, 23 May:

A speech analyzer that displays a three-dimensional spectral vector, representing a phoneme, on a simplified two-dimensional display.

J. C. Lesho and A. F. Hogrefe, *Ingestible Size Continuously Transmitting Temperature Monitoring Pill*, No. 4,844,076, 4 Jul:

A temperature-responsive transmitter that is capable of being encapsulated within an ingestible size pill. A unique circuit configuration uses a reduced number of components and allows the transmitter to operate with a small single-cell 1.0-1.5-volt battery.

H. W. Ko and J. P. Skura, *Electromagnetic Non-Invasive Measurement and Monitoring System for Osteoporosis*, No. 4,850,372, 25 Jul:

A method for noninvasively sensing bone mass loss associated with osteoporosis uses an electromagnetic field to measure impedance (or conductivity) changes in the bone. A decrease in conductivity is indicative of osteoporosis.

B. F. Kim, J. Bohandy, K. Moorjani, and F. J. Adrian, *Novel Technique Using Dependent Phase Detection for Detection of Superconductivity*, No. 4,851,762, 25 Jul:

Superconductivity is detected by measuring the resistance of a sample while one of two independent variables, temperature and applied magnetic field, is slowly varied or modulated and the other is maintained below its known critical value. Resistance is measured at the modulation frequency by phase detection techniques.

H. W. Ko, L. W. Hart, and J. P. Skura, *Electromagnetic Bone Healing Sensor Using a Multi-Coil Sensor Array*, No. 4,860,756, 29 Aug:

An electromagnetic field is used to measure impedance changes at or about a bone fracture site during the healing process. The

impedance change is a measure of the mechanical strength of the fracture site.

R. J. Costlow and A. G. Bates, *RF Circuit Utilizing a Voltage Controlled SAW Oscillator*, No. 4,868,524, 19 Sep:

A phase lock loop circuit employing a temperature compensated crystal oscillator is used to stabilize the RF output of a voltage-controlled SAW oscillator.

J. G. Frink, *Intercomputer Communications Based on Message Broadcasting with Receiver Selection*, No. 4,870,571, 26 Sep:

Communications between a plurality of computers connected to a common bus is controlled by means of message content tags that identify the information content of each particular message broadcast. A message filter associated with each computer is responsive

to the message content tag and alerts the associated computer to receive the particular message only if an appropriate content tag is present.

W. S. Devereux and E. E. Westerfield, *Pseudo-Random Code Generator for Use with a Global Positioning System*, No. 4,876,659, 24 Oct:

Thirty-two or more codes are stored in a ROM and selectively read out to form a pseudorandom clear/acquisition code for use in the GPS receivers.

A. L. Newman, *Implantable Helical Cuff*, No. 4,881,939, 21 Nov:

An implantable, inflatable helical cuff designed to be wrapped about a tubular body member such as a blood vessel. The cuff may be used, for example, to control occlusion of the vessel or to sense blood pressure.