



metrionix

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Jack Goldberg

Jack Goldberg is the President of Metrionix, Inc., an R&D and consulting business with expertise in electronic instrumentation and components; signal processing; sensors, measurement and control systems; medical devices; RF and digital communications; audio and acoustics; and manufacturing technology. Mr. Goldberg has over 35 years of experience in product development and manufacturing. Detailed knowledge includes embedded hardware and software, biological and audio signal processing, vital signs measurement, infusion pumps, electromagnetic and capacitive sensing, and hearing. He has served as an expert in product liability, intellectual property, breach of contract, and trade secret matters in cases involving medical, communications, and other complex electronic systems. Experience includes extensive trial and deposition testimony on behalf of both plaintiffs and defendants. Eleven issued and three pending patents to date.

Education: MIT Master of Science and Bachelor of Science, Electrical Engineering and Computer Science.

Affiliations: Senior member IEEE and member Acoustical Society of America.

PROFESSIONAL EXPERIENCE

Feb 1995-present **Metrionix, Inc., San Diego, CA** **President / Owner**

President of contract engineering and consulting business specializing in the area of electrotechnology and focusing on sensors, control, measurement, medical instrumentation, signal processing, RF technology, communications, audio and acoustics. Consulting efforts have included: research and development for various medical, scientific and audio instrument manufacturers, and expert witness work related to intellectual property, product liability, RF systems, and sound and hearing. R&D projects have included: miniature human implantable devices and associated sensing means; an optical system for analysis of farm animal biomaterials; radio frequency communication devices for the hard of hearing; sound measurement and processing systems; a system for irrigation control which improves efficiency and conserves water; a solar-powered electrochemical apparatus for mosquito abatement; and acoustical apparatus to assist in the fitting of hearing aids. Personally responsible for design of analog and digital circuitry, signal processing and control algorithms, acoustical planning and analysis, testing and evaluation, and software/firmware development. Experienced with embedded firmware programming, LabView, database, MatLab, and Visual Basic. Staff and associates include electrical, software, mechanical, industrial and bioengineers, technicians, and assemblers. Metrionix has laboratory space for device development, analysis and testing.

Jan 2005-present **Hearing Enhancement Group, LLC, Thousand Oaks, CA** **Chief Technical Officer / Owner**

Chief Technical Officer of business involved with the development and marketing of listening devices and other products related to hearing. Technology focus is in the areas of acoustics, signal processing, and control. Responsibilities include development of acoustical design, hardware and software, intellectual property strategy, management of all aspects of product development, including test, and technical interface with overseas factory. Developed proprietary position-sensing system for determining whether or not a headworn device is in place on a user's head.

Sep 1992-Feb 1995 IVAC Corporation, San Diego, CA
Vital Signs Engineering Manager

Directed entire staff of 24 in Business Unit of hospital equipment manufacturer. Technical and managerial contributor to three Product Development programs. Managed Operations Engineering efforts for existing line of products, with emphasis on cost and quality improvements, automation, regulatory issues, and customer complaints. Lead member of team tasked with Product Recall effort and associated response to FDA. Formulated long-term strategy for business unit and sought both technical and marketing partnerships. Created systems to streamline and better control existing business practices to ensure timely introduction of new products and responsiveness to ongoing production issues. Products included infrared and conventional clinical thermometers, and blood pressure measurement systems.

Dec 1984-Aug 1992 IVAC Corporation, San Diego, CA
Principal Engineer/Project Leader, Research and Advanced Development

Performed research and developed proprietary technology in support of fluid delivery systems product line, including flow and pressure measurement subsystems, data communication, and sensors for detection of air in fluid path. Conceptualized new products, recommended patent strategy, and evaluated business and technical proposals from outside organizations. Led teams for review of technologies for parent corporation, Eli Lilly, including flow measurement of fluids by means of thermal markers, microwave sensing of fluid composition, catheter-based RF tissue ablation, and non-invasive measurement of blood glucose. Set up microelectronics prototype lab. Prepared clinical protocols and regulatory submittals. Served as technical leader in development of new infrared clinical thermometer and devised unique calibration method.

1983-1984 Dyn-Aura Engineering Laboratories, San Diego, CA
Chief Engineer

Managed design, production, and test engineering functions for manufacturer of hearing aids, hearing test equipment and associated components. Designed analog circuitry and acoustic subassemblies, and improved assembly and test procedures. Supervised microelectronics assembly line, significantly increasing production yield. Implemented documentation standards and inventory control system. Conducted training seminars and product presentations, and contributed to company marketing plans.

1979-1983 Steinbrecher Corporation, Woburn, MA
Project Leader

Led product development teams for manufacturer of scientific instruments. Projects included a navigation system based on GPS satellite signal reception, a sonar signal filtering subsystem, and a moisture measurement system employing microwave technology. Designed control algorithms, data acquisition subsystems, and software for data analysis and information display. Analyzed communications systems for various military and commercial clients. Wrote technical operation and service manuals for products.

1978-1979 Mech-EI Industries, Woburn, MA
Manager of Electrical Design

Managed engineering group for supplier of equipment used in semiconductor manufacturing.

1973-1978 Grason-Stadler, Inc., Concord, MA
Staff Engineer

Product development for manufacturer of hearing test and acoustic measurement equipment.

EDUCATION

Massachusetts Institute of Technology

MS Electrical Engineering and Computer Science, 9/78

BS Electrical Engineering and Computer Science, 9/73

California Institute of Technology

1993 -- Management of Technology and Innovation (short-term executive program)

PROFESSIONAL AFFILIATIONS

Senior Member, Institute of Electrical and Electronics Engineers

Medicine and Biology, Signal Processing

Member, Acoustical Society of America

Member, American Auditory Society

Organizing Committee Member, MIT Enterprise Forum -- 1986-1991

Amateur Radio Extra Class license holder: W6JZ

PRESENTATIONS AND PUBLICATIONS

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| 2009 | US Patent Application | <i>Miniature resonating marker assembly</i> |
| 2009 | US Patent Application | <i>Method and system for predicting long-term exposure to a hazardous environment</i> |
| 2008 | US Patent Application | <i>Position sensing apparatus and method for active headworn device</i> |
| 2011 | US Patent #7,903,833 | <i>Headworn listening device and method</i> |
| 2011 | US Patent #7,882,743 | <i>Method and system for noise dosimeter</i> |
| 2010 | US Patent #7,836,770 | <i>Method and system for noise dosimeter with Quick-Check mode and earphone adapter</i> |
| 2009 | US Patent #7,535,363 | <i>Miniature resonating marker assembly</i> |
| 2006 | US Patent #7,135,978 | <i>Miniature resonating marker assembly</i> |
| 2000 | US Patent #6,098,463 | <i>Method and apparatus for measurement of wide dynamic range signals</i> |
| 1999 | US Patent #5,966,639 | <i>System and method for enhancing speech intelligibility utilizing wireless communication</i> |
| 1995 | US Patent #5,455,565 | <i>Fluid monitor system and method using a resonator</i> |
| 1993 | US Patent #5,260,665 | <i>In-line fluid monitor system and method</i> |
| 1992 | US Patent #5,150,969 | <i>System and method for temperature determination and calibration</i> |
| 1990 | US Patent #4,938,079 | <i>Thermal transit time flow measurement system</i> |
| 2006 | American Board of Trial Advocates, Orange County, CA | <i>Masters in Trial (Expert presentation at mock trial)</i> |
| 2006 | American Auditory Society Annual Meeting | <i>An inexpensive noise dosimeter</i> |
| 2001 | 141 st Meeting, Acoustical Society of America | <i>A new handheld meter for measuring the occlusion effect produced by, and leakage around, earmolds</i> |
| 1997 | 134 th Meeting, Acoustical Society of America | <i>Analog and Digital Signal Processing in a High Performance Miniature Sound Level Meter</i> |
| 1993 | 13th Annual Northeast Symposium on Health Care Technology | <i>Infrared Thermometry</i> |

TECHNOLOGY AND BUSINESS CONSULTATION, RESEARCH, AND PRODUCT DEVELOPMENT

From:	1/2008	Jain Irrigation, Inc.
To:	Present	Fresno, CA
	Duties:	Research and prototype development: control system to improve efficiency of irrigation systems.
From:	2/2007	Med-e-Cell
To:	2/2010	San Diego, CA
	Duties:	Research and prototype development: solar-powered system for mosquito abatement.
From:	10/2004	Hearing Enhancement Group, LLC
To:	Present	Thousand Oaks, CA
	Duties:	Product development and consulting regarding acoustics, headset design and listening devices.
From:	3/1995	Etymotic Research
To:	Present	Elk Grove Village, IL
	Duties:	Product development and consulting: noise dose measurement system; miniature sound level meter; communication system for hard of hearing; apparatus to assist in fitting hearing aids.
From:	6/2008	Moriah Partners, LLC
To:	8/2008	Long Beach, CA
	Duties:	Technology due diligence regarding acquisition of medical device company.
From:	4/2004	Coradiant Canada, Inc.
To:	10/2004	Montreal, Quebec
	Duties:	Product development, consulting and prototype production: custom printed circuit board for LAN/power/communications interconnect.
From:	6/2003	Misonix
To:	11/2003	Farmingdale, NY
	Duties:	Consultation regarding validation test station for controller board of system for soft tissue aspiration and emulsification.
From:	11/2002	IntellectExchange
To:	1/2003	Bedford, MA
	Duties:	Product design review and consulting regarding esophageal ablation apparatus.
From:	9/2000	Calypso Medical
To:	12/2002	Seattle, WA
	Duties:	Product research and development, manufacturing process development: system which aids surgeon, including miniature human implantable devices and extensive signal processing. Technology involves electromagnetic sensing.
From:	4/2002	Curt Mixon and Associates
To:	12/2002	San Diego, CA
	Duties:	Product development and consulting: motor control subsystem for laser focus as part of eye surgery system.

From:	12/2001	Advanced Pollution Instrumentation, Teledyne Instruments
To:	6/2002	San Diego, CA
	Duties:	Product development: enhancement of device for the measurement of ozone in gas samples.
From:	5/1999	Progeny Systems, LLC
To:	12/2000	San Diego, CA
	Duties:	Product development and consulting: system for the analysis of farm animal biomaterials. Technology involves optical transmission through sample and associated signal processing.
From:	5/1997	nCom Systems
To:	3/1999	San Diego, CA
	Duties:	Database design effort in support of thick film integrated circuit manufacturing process.
From:	9/1996	Akos Biomedical, Inc.
To:	10/1996	San Diego, CA
	Duties:	Consultation regarding FDA document submittal. Technology involves endoscopic surgery.

Litigation Support Experience – Depositions and Testimony

Depositions

	Holme Roberts & Owen, Denver, CO
Case:	SA Neurelec v Otologics, et al.
Court:	District Court, City and County of Denver, State of Colorado
	DEPOSED Nov 23, 2010 at San Diego, CA

	Law Offices of Michael Kinney, Bonsall, CA
Case:	Codonics, Inc. v DatCard Systems
Court:	U.S. District Court, Northern District of Ohio
	DEPOSED Dec 29, 2009 at Costa Mesa, CA

	Baker & McKenzie, San Diego, CA
Case:	Single Chip Systems and Neology v. Transcore and Intermec
Court:	U.S. District Court, Southern District of California
	DEPOSED May 11, 2007 at Los Angeles, CA

	Lemons, Grundy & Eisenberg, Reno, NV
Case:	Linda Wissenback v BMW of North America, LLC, et al.
Court:	Second Judicial District Court of the State of Nevada, Washoe County
	DEPOSED Nov 20, 2006 at San Diego, CA

	Baker & McKenzie, San Diego, CA
Case:	Single Chip Systems and Neology v. Transcore and Intermec
Court:	U.S. District Court, Southern District of California
	DEPOSED Jun 9, 2006 at Del Mar, CA

	Sheppard Mullin Richter & Hampton, Los Angeles, CA
Case:	Beckman Coulter, Inc. v Applera Corp.
Court:	U.S. District Court, Central District of California, Southern Division
	DEPOSED Jun 8, 2005 at Los Angeles, CA

	McDermott Will & Emery, San Diego, CA
Case:	Medtronic Minimed, Inc. v Smiths Medical MD, Inc.
Court:	United States District Court, District of Delaware
	DEPOSED Jan 26, 2005 at San Diego, CA

	Law Offices of Thomas J. Massey, Fallbrook, CA
Case:	Dickinson v Active Ear, Fox Hearing Aid, Aaron Marquis
Court:	Superior Court of the State of California, San Diego County
	DEPOSED Aug 21, 2002 at Fallbrook, CA

Court Testimony

	Holme Roberts & Owen, Denver, CO
Case:	SA Neurelec v Otologics, et al.
Court:	District Court, City and County of Denver, State of Colorado
	TRIAL TESTIMONY Feb 9, Feb 10, 2011

	Howrey
Case:	AuthenTec, Inc. v Atrua Technologies, Inc.
Court:	United States District Court, Northern District of California
	TECHNOLOGY TUTORIAL Apr 16, 2009

	Baker & McKenzie
Case:	Single Chip Systems and Neology v. Transcore and Intermec
Court:	United States District Court, Southern District of California
	TRIAL TESTIMONY Aug 22, Aug 23, 2007

	Knobbe Martens Olson & Bear
Case:	Exergen v SAAT, CVS, Daiwa
Court:	United States District Court, Massachusetts
	TRIAL TESTIMONY Jul 1, Jul 5, Jul 6, 2005

	Knobbe Martens Olson & Bear
Case:	Nellcor / Tyco Healthcare v Masimo
Court:	United States District Court, Central District of California
	TRIAL TESTIMONY Feb 24, Feb 25, Mar 9, Mar 16, Mar 25, 2004

	Dawnella Gilzean, Public Defender's Office, San Diego, CA
Case:	People of State of CA v. Calvin Lamont Parker
Court:	Superior Court of the State of California, San Diego County
	TRIAL TESTIMONY Jul 1, 2002

OTHER PRIOR AND CURRENT AFFILIATIONS AND CONSULTANCIES NOT DESCRIBED ELSEWHERE

BestProto, San Diego, CA
Braydon Corporation, San Ramon, CA
Endocare, Inc., Irvine, CA
Kuntz Manufacturing Co., Santa Ana, CA
Poco Power Corporation, San Luis Obispo, CA
VitalWave Corporation, Solana Beach, CA
World Access for the Blind, Huntington Beach, CA

References and further detail regarding litigation support are available upon request.