CURRICULUM VITAE
Richard Hodges

E-mail: rbhodges@gmail.com
http://www.richardhodges.com/

Accomplishments in Technology (selected)

High performance Noise Reduction, AEC and other algorithms for audio including machine learning techniques.

Ultrasonic presence detection using laptop speaker & microphone

Innovative techniques for reducing loudspeaker distortion by algorithmic simulation.

High-performance acoustic design for microphones and speakers, with simulation (COMSOL) and verification by acoustic measurements.

Conceived, patented and implemented unique acoustic configuration for speaker and microphones of a speakerphone. Also developed innovative AEC algorithm and led telephony standards compliance.

Represented Motorola SPS in the ISO/IEC MPEG international standards process. Involved in development of MP3 audio coding standard.

Unique technology for music synthesis, and for modification of signals from guitar and other instruments.

Invented a proprietary low bit rate voice coding algorithm. I managed development of products based on this algorithm through the stages of concept, prototype (hardware and software), financing, and commercialization. (ACT Networks)

Areas of Proven Experience

Sound and image processing, coding, and recognition algorithms
Software Environments: Matlab, Simulink, C, C++, COMSOL, Python, Lisp,...
Acoustic design, simulation (using COMSOL), and measurement.
Machine learning: data collection, training, embedded implementation
Fluid Dynamics simulation of wind noise generation and mitigation (headsets).
Integrated development of innovative systems, algorithms, software, digital and analog electronics, and acoustical, optical, and other technologies

Patents Issued and applied for

US 3,948,138 A New Type of Musical Instrument
US 6,747,581 Techniques for Variable Sample Rate Conversion
US 7,236,929 Echo Suppression and Speech Detection Techniques
US 7,433,462 Techniques for Improving Telephone Audio Quality
US 7,925,004 Speakerphone with Downfiring Speaker & Directional Microphones
US appl. 13/458,122 Reduction of Loudspeaker Distortion for Improved AEC
US 10,845,479 Movement and presence detection using laptop sonar

Career Biography (selected)

Principal Scientist, Synaptics Machine learning; Audio DSP algorithms; Acoustic design, simulation, and measurement;

Principal Scientist, Plantronics Inc. (acquired Octiv Inc.)
Responsible for development of acoustic design and algorithms and for speech audio: echo mitigation, noise reduction, AEC, audio quality evaluation, etc.

VP Technology, Octiv Inc., Berkeley CA
Responsible for oversight of all new technology including digital, analog, and acoustical. Develop and implement new algorithms for audio signal processing and telecommunications.

Research Technologist, Gibson USA, Berkeley CA
Develop technology for the next generation of electronic musical instruments

VP Technology, ACT Networks, Westlake Village CA
I founded this company to develop and commercialize medium bit-rate real-time speech coding for voice/data telecommunication applications. ACT Networks became a publicly traded company of which I was a major stockholder.

Assistant Professor, EECS dept., UC Berkeley
Taught courses in Computer Science and Artificial Intelligence.

Publications

W.W. Bledsoe and Richard Hodges, "A Survey of Automatic Theorem Proving," *Proceedings of AAAI-87 (Survey Papers)*, AAAI, 1987

"The MPEG Video Compression Standard," *Computer Design*, 1993

"Drum is the Ear of God: Africa's Inner World of Music," *Material for Thought* #13, Far West Press, San Francisco 1992

"The Quick and the Dead: The Souls of Man in Vodou Thought,"*Material for Thought* #14, Far West Press, San Francisco 1995

"From the Mat to the Street: Judo and Life", *Material for Thought* #15, Far West Press, San Francisco 1998

"The Way of a Tourist," *Shambala Sun* Feb/Mar 1996

Foundation Course in African Music (with C. K. Ladzekpo), a popular WWW page at http://home.comcast.net/~dzinyaladzekpo/Foundation.html

"Case Study: Cost-effective and rapid audio headset design and verification," *EE Times* Audio Design Line 6/22/2010

"Thus Spake Beelzebub", Gurdjieff International Review 2012 (online), http://www.gurdjieff.org/hodges1.htm

Other Accomplishments and Interests

Fourth Degree Black Belt in Judo; winner of Gold Medal at the 2009 World Masters Judo Tournament (see http://r.hodges.home.comcast.net/~r.hodges/JudoMasters.html)
Two-time winner of U.S. Masters National Championship