HOMEPAGE & BIOGRAPHY: www.bambi.net/bob.html
PROFILE: www.linkedin.com/in/boblash1
EMAIL: bob@bambi.net

Bob Lash, M.D., B.S.E.E./C.S.

Objective

As a medical doctor, engineer, and entrepreneur, with 39 years of industry experience leading product development from concept through to production, I enjoy pioneering new medical devices and applications in fast-moving environments. I love to innovate, leveraging existing technology when it makes business sense to do so. I also enjoy using my industry experience to help shape product vision and strategic business direction.

Experience

Potrero Medical, Inc. Hayward, CA 2021 – 2023

VP of R&D

- Responsibilities included leading new product research and product development for an automated system to monitor urine output and intra-abdominal pressure in the operating room and ICU to reduce the risk of acute kidney injury.
- Directed engineering. Oversaw project planning as well as management of in-house and out-of-house teams providing analog, digital, mechanical, industrial design, electrical safety, manufacturing engineering, GUI design, software engineering, and software quality assurance.
- Provided mentoring, resources, design assistance, and help with problem solving.
- Contributed to the design of bench validation studies to support FDA compliance.
- Assessed patent portfolio and competitive intellectual property on an on-going basis.

DawnLight Technologies, Inc. Palo Alto, CA 2020 - 2021

VP of Engineering

- Responsibilities included leading product development for both an AI deep learning based computer vision patient fall detection system and a radar based contactless vital signs system for remotely monitoring heart rate and respiratory rate.
- Directed engineering. Oversaw management of in-house and out-of-house teams providing analog, digital, mechanical, industrial design, electrical safety, manufacturing engineering, GUI design, software engineering, and software quality assurance.
- Implemented the formal Design Control Process for FDA compliance.
- Provided mentoring, resources, design assistance, and help with problem solving.
- Track record of hitting milestones on time and within budget.
- Contributed to the design of clinical validation studies to support the FDA 510[k] submission process.
- Worked closely with team to establish contract manufacturing.

Flowonix Medical, Inc. Redwood City, CA 2016 – 2020

VP of R&D

- Responsibilities included leading product development for an FDA Class III fully implantable intrathecal drug delivery pump and wireless pump programmer for the treatment of chronic pain and spasticity.
- Directed all engineering. Oversaw project planning as well as management of in-house and out-of-house teams providing analog, digital, mechanical, industrial design, electrical safety, manufacturing engineering, GUI design, software engineering, and software quality assurance.
- Provided mentoring, resources, design assistance, and help with problem solving.
- Track record of hitting milestones on time and within budget.
- Contributed to the design of bench validation studies to support the FDA PMA supplement process for product enhancements, and participated in discussions with the FDA. Assisted in obtaining FDA approval for PMA supplements.
- Worked closely with the contract manufacturer.
- Secured patent filings on an on-going basis.

Cardiox Corporation Redwood City, CA 2011 – 2015

Senior VP, Chief R&D and Engineering Officer

- Responsibilities included leading new product R&D, including the product development process, from concept stage through to production for a non-invasive optical fluorescence laser-based cardiac shunt detection system and a liver function monitoring system.
- Directed all engineering. Oversaw project planning as well as management of in-house and out-of-house teams providing analog, digital, mechanical, optical, industrial design, electrical safety, manufacturing engineering, GUI design, software engineering, and software quality assurance.
- Provided mentoring, resources, design assistance, and help with problem solving.
- Track record of hitting milestones on time and within budget.
- Contributed to the design of both bench and clinical validation studies to support the FDA 510[k] process, and participated in discussions with the FDA. Assisted in obtaining FDA clearance and CE approval.
- Secured patent filings on an on-going basis.
- Worked closely with contract manufacturers. Supported securement of ISO 13485 registration.
- Experienced working with investors and participating in road show presentations.

InnovaMedix, Inc. Redwood City, CA 2011 – 2015

Board of Directors

SurgOptix, Inc. Redwood Shores, CA 2011 – 2013

Scientific Advisory Board Member

ViOptix, Inc. Fremont, CA 2002 – 2010

Senior VP and Chief R&D Officer [2008 – 2010]

VP of Engineering [2002 – 2008]

- Responsibilities included leading new product R&D, including the product development process, from concept stage through to production for a non-invasive laser-based tissue oximeter featuring wireless transmission for remote viewing on smartphones and tablets. Also led development of an invasive vessel avoidance system for spinal surgery, a hypoxia-detecting nerve root retractor for spinal surgery, and an implantable anastomotic coupler for microvascular surgery.
- Transformed "science project" stage technology into BETA commercial product prototype within 3 months of joining company.
- Directed all engineering. Oversaw project planning as well as management of in-house and out-of-house teams providing analog, digital, mechanical, optical, industrial design, electrical safety, manufacturing engineering, GUI design, C++ based software engineering, and software quality assurance.
- Grew the in-house engineering staff to nine. Provided mentoring, resources, design assistance, and help with problem solving.
- Track record of hitting milestones on time and within budget.
- Contributed to the design of both bench and clinical validation studies to support the FDA 510[k] process, and participated in discussions with the FDA. Obtained FDA clearance. Oversaw clinical affairs.
- Secured patent filings on an on-going basis.
- Selected, qualified and managed major contract manufacturer.
- Worked closely with investors and participated in road show presentations.
- Oximeter product consists of a laser-based embedded-control console which is fiberoptically coupled to sterile disposable patient sensors using ODIS (Optical Diffusion Imaging and Spectroscopy) technology. Features Wi-Fi transmission to a back-end Linux server farm to allow remote viewing on a smartphone or web browser. Applications include plastic and reconstructive surgery, traumatic shock, peripheral vascular disease, spinal surgery, breast cancer, and neonatology.

Driving Media, Inc. Los Gatos, CA 2000 – 2001

VP of Engineering

- Responsibilities included all technology development for a massively scalable online service for consumers.
- Directed all engineering. Oversaw technical project planning as well as hiring and management of Software Engineering staff and IT services.
- Led creation of high performance web page Application Server, Content Management System, XML data integration, Flash client integration, Registration and Login, Message Board integration, and Stats tracking.
- Constructed scalable co-located server farm

Zorch, Inc. Menlo Park, CA 1998 - 2000

Chief Technical Officer, Co-founder

- Responsibilities included all technology development for a massively scalable online service.
- Directed all engineering. Oversaw technical project planning as well as hiring and management of Software Engineering staff and IT services.

Infoseek / Disney's GO Network Sunnyvale, CA 1998

Engineering Manager

- Continued to oversee WebChat Communications engineering staff and technical operations during its acquisition by Infoseek Corporation. Assisted with transfer of technology and its integration into Disney's GO Network. Subsequently left to join other WebChat founders in a new venture, Zorch, Inc, as its CTO.

WebChat Communications Menlo Park, CA 1993 – 1998

Chief Technical Officer, Co-founder

- Responsibilities included technology development for the WebChat Broadcasting System, a 3 million member web-based community.
- Directed all engineering. Oversaw technical project planning as well as management of Software Engineering Staff (server applications) and IT services (UNIX administration and 24 X 7 operations).
- Designed massively scalable web site for this service.
- Site acquired by Infoseek in April, 1998. Integrated into Disney's GO Network.
- Constructed and managed Web server farm handling 20 million hits/day, 6 million ad impressions/day, and 30 MBPS peak bandwidth, using 20 DEC Alpha UNIX servers, SUN Enterprise server, and RAID-5 infrastructure.
- Assisted in crafting high-level business strategy and vision as a member of the Board of Directors.

M.D. Personal Products, Inc. Hayward, CA 1989 – 1993

Vice-Chairman, Chief of Research & Development, Co-founder

- Raised venture backing from Hambrecht & Quist for development of a gynecological medical device: the "Women's Choice" female condom.
- Recruited former VP of Marketing at Kimberly-Clark to serve as CEO.
- Responsible for technology development including prototyping, timeline and budgetary planning, allocation of staff and resources, R&D, device development, laboratory testing, design and conduct of clinical trials, management of FDA regulatory affairs (including 510[k] and PMA filings), development of GMP program, patents, and engineering support.

M.D. Engineering, Inc. Hayward, CA 1984 – 1989

President & CEO, Co-founder

- Responsibilities included development of new embedded-control based medical devices and technology in the area of surgical instrumentation for cosmetic and endoscopic general surgery. Led the analog, digital, software, and mechanical engineering teams. Directed all R&D. Oversaw clinical trials, manufacturing, marketing, sales, FDA regulatory affairs (including 510[k] and PMA filings), GMP/QS, patents, and administrative functions.

- Led the development of a microprocessor-based laparoscopic insufflator, endoscopic xenon fiber-optic light source (with video controlled auto-iris), microprocessor-based intraoperative blood loss monitor, surgical aspiration system, sterile disposables, oral implant, autologous tissue transfer system, core temperature biotelemetry probe, and a pulse oximeter.

- The venture was acquired by Medical Device Resource Corporation.

Academic / Medical Device Engineering Projects

1989 - 1997	Intraoral Controller for Quadriplegics, N.I.H. Grant
1982	Ocular Communicator for Quadriplegics, U.C. San Diego
1981	Core Temperature Telemetry Recorder, U.C. San Diego
1978 - 1981	Caloric Expenditure Computer Monitor
1978	Surgical Nerve Stimulator, Stanford
1979	Automated Hearing Tester, U.C. Berkeley
1977-1979	Visual Evoked Potential System, U.C. Berkeley
1977	Engineering Intern, IBM
1974	Engineering Intern, Stanford Linear Accelerator Center
1973-1977	Microprogrammed Computer, Homebrew Computer Club

As an original member of The Homebrew Computer Club, I designed and constructed a "homebrew" computer with a 30 bit wide micro-control store and user-definable RISC type instruction set. I built it entirely out of MSI/SSI TTL. I also wrote software tools for the project including my own compiler and assembler.

Hardware Design Specialty Areas

Embedded control (including PIC and PSoC platforms), transducers, data acquisition systems, signal processing, analog and digital design, optoelectronics, fault-tolerant systems, IEC 60601-1 compliance, electro-mechanical and mechanical medical devices.

Operating Systems

Linux (since 1994), SUN Solaris, FreeBSD, Digital UNIX, Windows Embedded. Platforms: Intel, DEC Alpha, and SUN SPARC.

Programming Languages

Python, Perl / XML, C, Javascript, VBScript, HTML / CGI, Flash / ActionScript, Visual Basic, and Fortran. Assembly languages: x86, Z80, 6502, 1802, IM6100, PDP-8, and PDP-11.

Databases

UNIX DBM, mySQL, XML data feeds, and LDAP.

Applications

Microsoft Project, Excel, PowerPoint, and Word.

Education

University of California Berkeley, CA 1975 - 1979

- **B.S. Degree in Electrical Engineering and Computer Science**
- Graduated Summa Cum Laude, with emphasis in Bioengineering

University of California San Diego, CA 1979 - 1983

- **M.D. Degree**

St. Mary's Hospital San Francisco, CA 1983 - 1984

- **Physician – Transitional Internship in Surgery and Medicine**

Honors

Phi Beta Kappa
Tau Beta Pi
Eta Kappa Nu

U.S. Patents

U.S. Patent No. 4,770,187	"Surgical aspirator and monitor"
U.S. Patent No. 4,662,873	"Intravenous tube stress relief bracelet"
U.S. Patent No. 4,683,884	"Smokeless low-noise electrocautery"
U.S. Patent No. D298,650	"Surgical aspirator and pump"
U.S. Patent No. 7,355,688	“Optical probe for optical imaging system”
U.S. Patent No. 7,525,647	“Medical device probe with source and detector sensors”
U.S. Patent No. 7,538,865	“Source and detector sensor arrangement”

U.S. Patent No. 7,657,293	"Method for monitoring tissue viability in flaps"
U.S. Patent No. 7,796,247	"Tissue oximeter with source and detector sensors"
U.S. Patent No. 8,290,558	"Tissue oximeter intraoperative sensor"
U.S. Patent No. 8,382,666	"Medical device probe and connector"
U.S. Patent No. 8,622,918	"Method for monitoring viability of tissue flaps"
U.S. Patent No. 8,688,186	"Retractor device with oximeter sensor and force sensor"
U.S. Patent No. 8,792,951	"Bone oxygenation measurement"
U.S. Patent No. 8,929,967	"Noninvasive sensor housing"
U.S. Patent No. 8,938,279	"Multi-depth tissue oximeter"
U.S. Patent No. 8,977,332	"Retractor device with oximeter sensor and force sensor"
U.S. Patent No. 9,031,628	"Device for assessing ischemia in nerve root tissue using oxygen saturation"
U.S. Patent No. 9,114,226	"Devices and monitoring systems for locating a blood vessel"
U.S. Patent No. 9,339,221	"Diagnosing intestinal ischemia based on oxygen saturation measurements"
U.S. Patent No. 9,380,966	"Tissue retractor oximeter"
U.S. Patent No. 9,579,051	"Medical device probe and connector"
U.S. Patent No. 9,622,694	"Measuring cerebral oxygen saturation"
U.S. Patent No. 9,636,096	"Retractor systems with closed loop control"
U.S. Patent No. 9,693,729	"Detecting and avoiding blood vessels"
U.S. Patent No. 9,737,213	"Using an oximeter probe to detect intestinal ischemia"
U.S. Patent No. 9,854,993	"System for detecting and avoiding blood vessels"
U.S. Patent No. 9,901,403	"Oximeter with marking feature"
U.S. Patent No. 10,149,650	"Detecting and avoiding blood vessels"
U.S. Patent No. 10,165,970	"Tissue oximeter intraoperative sensor"
U.S. Patent No. 10,178,968	"Tissue retractor oximeter"
U.S. Patent No. 10,335,070	"Using an oximeter probe to detect intestinal ischemia"
U.S. Patent No. 10,335,074	"Noninvasive sensor housing"
U.S. Patent No. 10,456,079	"Detecting and avoiding blood vessels"
U.S. Patent No. 10,537,271	"Measuring cerebral oxygen saturation"
U.S. Patent No. 10,548,526	"Method for monitoring viability of tissue flaps"
U.S. Patent No. 10,667,721	"System for detecting and avoiding blood vessels"
U.S. Patent No. 10,709,367	"Multidepth tissue oximeter"
U.S. Patent No. 10,835,227	"Retractor systems with sensors"
U.S. Patent No. 10,905,332	"Method of making a bone oxygenation measurement probe"
U.S. Patent No. 11,179,074	"Probe for monitoring wet or moist environments"
U.S. Patent No. 11,284,822	"Tissue oximeter intraoperative system"
U.S. Patent No. 11,375,925	"Medical device probe and connector"
U.S. Patent No. 11,432,763	"Detecting and avoiding blood vessels"
U.S. Patent No. 11,452,471	"Tissue Retractor Oximeter"
U.S. Patent No. 11,457,812	"Using an oximeter probe to detect intestinal ischemia"

U.S. Patent No. 11,484,209	"Method Of Making A Bone Oxygenation Measurement Probe"
U.S. Patent No. 11,540,754	"Using Near And Far Detectors To Measure Oxygen Saturation"
U.S. Patent No. 11,564,601	"Multidepth Tissue Oximeter"
U.S. Patent No. 11,622,715	"System For Detecting And Avoiding Blood Vessels"

Papers and Publications

Lash, R., Neroth, C., and Marg, E., *A Microprocessor Based System for Visual Evoked Potential Measurement*, in Proceedings of the Twelfth Hawaii International Conference on System Sciences, vol. 1, pp. 210-213, 1979

Lash, R., *A Computer Algorithm to Control Walking Function in Paraplegics Using Hypothetical Muscle Stimulator System*, doctorate thesis, University of California Biomedical Library, San Diego, 1983

Maloney, S., Zlotolow, I., Lash, R., and Sproles, C., *Feasibility Testing of an Intraoral Controller Prototype*, Proceedings of the 21st Annual Neural Prosthesis Workshop, NIH Oct., 1990

Maloney, S., Zlotolow, I., Lash, R., and Kovacs, G., *Control Characteristics of an Intraoral Controller Prototype*, Proceedings of the 22nd Annual Neural Prosthesis Workshop, NIH, Oct., 1991

Maloney, S., Zlotolow, I., and Lash, R., *Optimization of Proprioceptive, Visual, and Auditory Feedback for an Intraoral Controller*, Proceedings of the 23rd Annual Neural Prosthetics Workshop, NIH, Oct. 1992

Maloney, S., Zlotolow, I., and Lash, R., *Intraoral Controller Emulation of a Computer Mouse*, Proceedings of the 27th Annual Neural Prosthetics Workshop, NIH, Oct. 1996

Interests

Amateur radio astronomy, antique computer restoration, electronic hobby projects, scuba diving, travel, and guitar. I also make an excellent Caesar salad.

Biography

Please see http://www.bambi.net/bob.html