

Dr. Martin Buehler

53 Merrill Road • Watertown, MA 02472 • 781-664-4349 • mxbuehler@gmail.com

TECHNOLOGY EXECUTIVE

EXECUTIVE PROFILE

Senior executive with unique and extensive technology background in both private industry and academia. Strengths include team building and management, strategic vision and goal setting, technical leadership and execution. Dynamic agent of change with analytical nature and high energy level. Interested in applied R&D or product development opportunities requiring strategic leadership and technical skills.

AREAS OF EXPERTISE

- **Technology Expert and Visionary**
- **Strategic Planning**
- **Market Analysis**
- **Building Alliances & Partnerships**
- **Innovation Management**
- **Multi-Lingual and Multi-Cultural**
- **Building and Directing High Producing Teams**
- **International Top Technology Authority**
- **Persuasive Public Speaker**
- **Clear Communicator**

PROFESSIONAL EXPERIENCE

VECNA TECHNOLOGIES • CAMBRIDGE, MA

Founded in 1999 by MIT alumni, Vecna Technologies is a unique, self-funded, high-technology company that develops healthcare, business and robotics solutions, with offices in Cambridge MA, and Greenbelt MD. [150 employees]

VICE PRESIDENT, LOGISTICS SOLUTIONS

2011 – PRESENT

Reporting to the founder, my mission is to drive development of robotics products in healthcare and commercial logistics.

- Leading robotics efforts for QC Bot, an autonomous hospital delivery robot, in terms of R&D, prototype development, pilot deployments (US and France), and product development. Developing related products in commercial logistics for autonomous warehousing and order fulfillment.

IROBOT CORPORATION • BEDFORD, MA

Largest publicly traded company devoted exclusively to robotics. Maker of the Roomba robotic vacuum cleaner and the PackBot bomb disposal robot. International company with offices in the U.S., England, Hong Kong, and India. [Over 600 employees]

DIRECTOR OF RESEARCH, MANIPULATION AND MOBILITY

2011

DIRECTOR OF RESEARCH COMPETENCY, CHIEF PRINCIPAL INVESTIGATOR

2009 – 2011

CHIEF ROBOTICIST, RESEARCH PRINCIPAL INVESTIGATOR

2008 – 2009

Brought in to provide leadership to the iRobot R&D group, and the company, to help transition from small business funding sources to larger opportunities in competition with large defense contractors, and to grow a new manipulation expertise and project base. Provide technology expertise to Government, home robot, and health divisions.

- Broad spectrum of responsibilities, including M&A support, cross-divisional working groups, strategic briefs to top management, developing technology roadmaps, business development, and project management. Direct reporting relationship to CTO. Leadership team member of company-wide CTS (Common Technology Services) group.

- Initiated strategic manipulation R&D efforts, won and led ten innovative, externally funded manipulation projects, totaling over \$3M (\$15.2M with all options), including major DARPA projects. Managed subcontracts to companies and universities, technology licensing and deliverables.
- As Competency Manager, responsible for R&D group (~35 researchers) leadership, hiring and all personnel matters, setting technical direction. The group is distributed in Bedford, MA, Durham, NC, and San Luis Obispo, CA.
- Initiated and led cross-company manipulation working group to accelerate innovation and cross-divisional sharing of know-how and expertise.
- Developed partnerships with several companies and obtained funding to integrate their technology on our platforms.
- Capture manager and proposal lead for externally funded projects, including a \$63M project (\$130M w. options) with 60 Principal Investigators, ten companies and universities, including MIT, Stanford, Georgia Tech, Lockheed Martin.
- Represented iRobot at numerous public national and international venues, including expert panels and keynote speeches at international conferences. Invited to give plenary speech at the largest robotics conference (ICRA) in Shanghai, May 2011.

BOSTON DYNAMICS • WALTHAM, MA

Boston Dynamics is a high-tech robotics company that specializes in building dynamic robots and software for human simulation. [~60 employees]

DIRECTOR OF ROBOTICS

2003 – 2008

Started and grew the company's robotics group to over 30 people. Doubled the company's employees, multiplied revenues, and implemented and iterated on new organizational structures to facilitate and manage growth in robotics.

- Led the flagship \$12M DARPA BigDog (a 250lb four-legged robotic pack-mule) project to success and positioned for subsequent win of \$32M follow-on phase. The BigDog YouTube clip has been seen over 10M times, an all-time most viewed science and technology video. BigDog is a robotics success story with world-wide fame and recognition.
- Build and managed two high-performing design and experimental evaluation teams on a day-to-day basis.
- Led or contributed to all robotics activities, including major off-site robot demos to Army/Marines.
- Brought in two DARPA robotics projects with me from McGill University (RHex, RiSE), started a third (LittleDog).
- Brought in (from my McGill group) and hired numerous key people critical to the company's robotics success.
- Introduced and taught agile project management to the BigDog teams, which was later also adopted by the company's simulation group.
- Obtained numerous awards for BigDog, including a 2006 Popular Mechanics Breakthrough Award.

MEHELIGENT • MONTREAL, QUEBEC, CANADA

Startup company to bid on the \$60M+ U.S. Dep. Of Defense Future Combat Systems program.

FOUNDER AND PRESIDENT

2003

Competed and won final round selection with RHex as Future Combat Systems' SUGV, during McGill tenure. Partnered with U.S. Prime - Soar Technology, Ann Arbor, MI. Gave numerous demos and presentations, incl. Boeing, DARPA Tech, Ft. Leonard Wood, Air Force Protection, SwRI, YUCCA Mountain.

M1 MONOPODS • ZÜRICH, SWITZERLAND AND MONTREAL, QUEBEC, CANADA

Swiss VC-funded high tech startup to develop and franchise (Formula1-style) jockey-operated racing robot competitions.

CO-FOUNDER, TEAM LEAD

2001 - 2002

Developed and demonstrated first-ever jockey-driven dynamic running robot.

MCGILL UNIVERSITY • MONTREAL, QUEBEC, CANADA

McGill is a top international university with 21 faculties and professional schools offering over 300 programs at the undergraduate and graduate levels.

ASSOCIATE PROFESSOR, WITH TENURE

1997 - 2003

ASSISTANT PROFESSOR

1991 - 1997

Built internationally renowned robotics research group with focus on mobile and legged robots, dynamic manipulation, and motor design and control. Supervised graduate students, and taught engineering classes.

- Director, Ambulatory Robotics Lab. Initiated, obtained funding for, and managed many robotics projects. Over \$1M/a research funding in 2002/03 from DARPA, DRDC and other sources.

- Invented and designed revolutionary six-legged robot, RHex, and turned it into a major DARPA project. Led team at McGill responsible for platform and behavior development, and sponsor demos. Grew into a multi-university, multi-million \$ project, and helped start a major DARPA Biodynamics program (which later funded the BigDog and RiSE projects at Boston Dynamics). RHex projects are still going on today at several companies and universities.
- Published over 100 peer reviewed robotics journal articles, conference papers, and book chapters.
- Graduated over 30 Ph.D. and M.Eng. students. Taught undergraduate and graduate classes in Mechanical Engineering, Design, Mechatronics, Systems, and Robotics. Introduced innovative team- and project-based teaching methods in large design classes (100-150 students).
- Named McGill University Dawson Scholar, 2003.
- Authored most cited article, Int. Journal of Robotics Research: *RHex: A Simple and Highly Mobile Hexapod Robot*, 2001.
- Best Paper Award, IROS: *Development of a High Performance Direct-Drive Joint*, 2000.
- Scholar, Canadian Institute for Advanced Research, 1991-95.
- NSERC/CIAR junior Industrial Research Chair, 1991-94.
- Academic background and projects detailed further at www.martinbuehler.net

OTHER PROFESSIONAL ACTIVITIES AND AWARDS

- First-named inventor on three U.S. patents.
- Senior Member IEEE. Nominated for IEEE Fellow, and the Joseph Engelberger award in Technology.
- Many invited plenary, panel, keynote or featured talks, including international venues, like Berlin, Paris, Taipei, representing iRobot, Boston Dynamics, or McGill University. Over 50 international conference, symposia or workshop presentations of scientific papers. Over 30 invited seminars at national and international companies and universities. Many presentations as part of DARPA project participation in RHex, RiSE, LittleDog, BigDog projects.
- APEX Grand Award 2007. Awarded to the Journal of Field Robotics, for the two Special Issues on the "2005 DARPA Grand Challenge", which I initiated and co-edited.
- Initiated and co-edited three special issues on the "DARPA Urban Challenge". Five of the twenty most cited articles of all robotics publications in 2008 and 2009 were in this special issue (including the #1 cited article).
- Associate Editor, IEEE Transactions on Robotics and Automation, 1998-2003.
- Editorial Board, The International Journal of Robotics Research, 2003-08. Advisory Board since 2008. IJRR is the #1 rated robotics journal in 2011.
- Associate Editor, Journal of Field Robotics, since 2005. JFR is the #2 rated robotics journal in 2011.
- Published two best-selling Springer books: "The 2005 DARPA Grand Challenge" and "The DARPA Urban Challenge."
- Participated in organizing committees of over 20 international robotics conferences.

PERSONAL

- Self and professional improvement enthusiast, Bikram Yoga practitioner, VP Public Relations at Toastmaster, weekend gardener.
- Languages: German (fluent, mother tongue), French (advanced, used to be fluent), Spanish (basic).
- US Citizenship since March 2011.
- Married with three adult children.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PostDoctoral Associate, 1991. Research in Prof. Marc Raibert's LegLab with quadruped and kangaroo robots.

YALE UNIVERSITY

Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in Electrical Engineering, 1985 and 1990
Thesis: *Robotics in Intermittent Dynamical Environments*

KARLSRUHE UNIVERSITY, GERMANY

Vordiplom in Electrical Engineering, 1983