

Matthew Malchano

Vice President of Software · Boston Dynamics
U.S. Citizen

PROFESSIONAL SUMMARY

Engineering executive and robotics pioneer with more than 25 years of experience spanning fundamental research and large-scale commercial product development. As Vice President of Software at Boston Dynamics, leads a 60-person Central Software organization and serves as Company Security Officer. As organization leader, shaped the direction of software engineering at Boston Dynamics for more than 13 years. Personal deep contributions across many domains of software as well as in autonomy, perception, manipulation, and legged locomotion, with impact on every robot and product inside the company.

EXPERIENCE

Vice President of Software *2021 – Present*

Boston Dynamics

- Built and leads a 60-person Central Software organization spanning core software engineering, machine learning infrastructure, cloud data and customer-facing applications, product security, and advanced robotics R&D in safety, computation, algorithms, and robot interaction.
- Serves as Company Security Officer, owning cybersecurity strategy and data-sovereignty protocols with accountability to board-level stakeholders.
- Drives software technology roadmap and organizational health across one of the world's leading robotics companies.

Principal Software Engineer and Software Lead *2017 – 2021*

Boston Dynamics

- Led multiple product software teams responsible for creating and shipping Spot, Boston Dynamics' first commercial robot product and one of the company's most significant revenue streams.
- Directed software architecture, system integration, and engineering process across the full Spot product lifecycle from prototype to commercial release.
- Drove on-going organization-wide transformations of software engineering culture, capabilities, and process inside Boston Dynamics. Introduced CI/CD pipelines, issue tracking, and modern build and test processes.

Staff Software Engineer *2013 – 2017*

Google (post Boston Dynamics acquisition)

- Led the team responsible for integrating codebases and on-robot software with Google Replicant, following Boston Dynamics' acquisition by Google.
- Made direct technical contributions to manipulation, perception, controls, and software architecture for the Spot hydraulic robot and early electric prototypes. Assisted in Handle and later Stretch architecture

Senior Robotics Engineer *2003 – 2013*

Boston Dynamics

- Led the Perception and Autonomy hardware/software system for the LS3 quadruped, managing JPL and NREC subcontractors and successfully delivering all program objectives to DARPA. Personally presented and live-demonstrated the system to the DARPA Director, senior leadership, and the Joint Chiefs of Staff.
- Served as systems engineer and lead software engineer for the Sand Flea, a novel urban hopping robot capable of jumping onto rooftops and over obstacles.
- Served as a key founding engineer of robotics team and on the BigDog project.

- Designed and built in small team substantial portions of Boston Dynamics' foundational robotics software infrastructure including the real-time control framework, early vision and LIDAR based perception, logging, communications, and systems software.

Research Assistant — MIT Leg Lab 2001 – 2003

MIT AI Laboratory

- Conducted research on algorithms and control for legged locomotion.
- Teaching assistant for 6.004 Computation Structures.

Software Developer 1999 – 2001

Akamai Technologies

- Early-stage employee on the team that shipped all customer-facing applications as well as the Operations Control Center and other visual display systems.

EDUCATION

M.Eng., Computer Science & Electrical Engineering 2003

Massachusetts Institute of Technology

S.B., Computer Science 2001

Massachusetts Institute of Technology

SKILLS

Leadership: Technical leadership · Engineering management · Innovation · Executive communication · Organization building and scaling · Prototype-to-product development

Robotics: Autonomy and perception systems · Robot manipulation · Legged and wheeled locomotion · Kinematics, dynamics, and closed-loop control · Sensing and sensor fusion

Software: C++ · Python · Bazel · Real-time and distributed systems · Systems programming

SELECTED PATENTS

- Hopping Robot — U.S. Pat. No. 8,849,451 (2014)
- Systems and Methods for Robotic Self-Right — U.S. Pat. No. 9,308,648 (2016)
- Execution of Robotic Tasks — U.S. Pat. No. 9,987,745 (2018)
- Robotic Systems and Methods for Task Scoring and Selection — U.S. Pat. No. 9,969,082 (2018)
- Methods and Devices for Automatic Gait Transition — U.S. Pat. No. 9,931,753 (2018)
- Constrained Mobility Mapping — US Patent 11,416,003 (2022)
- Door Opening Behavior — U.S. App. No. 20220193905 (filed 2021)
- Network communication devices and methods for robotic operations — US Patent App. 18/984,434 (filed 2025)

SELECTED PUBLICATIONS

- "Real-time pose estimation of a dynamic quadruped in GPS-denied environments for 24-hour operation," International Journal of Robotics Research, 2016
- "High fidelity day/night stereo mapping with vegetation and negative obstacle detection for vision-in-the-loop walking," IEEE/RSJ IROS, 2013
- "Robust multi-sensor, day/night 6-DOF pose estimation for a dynamic legged vehicle in GPS-denied environments," IEEE ICRA, 2012
- "Autonomous navigation for BigDog," IEEE ICRA, 2010
- "Urban hopper," Unmanned Systems Technology XII, 2010