Exponent®
Engineering & Scientific Consulting

Dan Kingsley, Ph.D., P.E.

Principal Engineer | Vehicle Engineering
Phoenix
+1-623-587-4168 | dkingsley@exponent.com

Professional Profile

Dr. Daniel Kingsley specializes in the conceptualization, specification, and design of innovative and prototype systems, with specific focus on robotic systems, actuator design — including pneumatic, hydraulic and electro-mechanical devices — and defense technology development. He has fifteen years of experience in the engineering development and design process, from conceptualization to fielding, including design for manufacture and design for assembly exercises.

Dr. Kingsley is particularly experienced in the rapid realization and maturation of designs by integrating closed-loop assessment and feedback into the design process. To support rapid prototyping and development efforts, he has extensive experience with a wide range of conventional and CNC fabrication, 3D printing, and other manufacturing processes.

Dr. Kingsley has considerable experience with Computer Aided Design (CAD) software in support of component and assembly design, part and system modeling, assembly analysis, and finite element analysis. Additionally, he has extensive experience managing the interface between CAD modeling and fabrication processes, to ensure that software models are transitioned to manufacturing requirements that meet both functional demands and design intent.

Dr. Kingsley's broad background between engineering disciplines, coupled with his extensive experience in engineering design and fabrication processes allows him to play a critical role in Exponent's ability to rapidly develop prototype devices and bespoke test equipment. Dr. Kingsley has designed such diverse systems as fatigue testing equipment for heavy vehicle components, shock and vibration fixtures for the testing of drone aircraft, biomimetic human torso robotic platforms, unmanned ground vehicles for military applications, football pressure and temperature measurement devices, remote camera systems, high-g impact sleds, electric vehicle battery pack penetrators and bottle cap missiling testbeds.

Dr. Kingsley has extensive experience in product design for military applications, with nearly two years spent in theater developing and supporting new technology insertions. Dr. Kingsley has been deployed to Afghanistan multiple times in support of United States and United Kingdom programs. While in theater, he has worked directly with warfighters to rapidly develop solutions to capability gaps, with design iterations being driven directly by feedback from operational users on a wide range of projects. He has led or supported efforts including counter-IED operations; vision enhancement; intelligence, surveillance and reconnaissance systems; force protection; mounted and dismounted soldier support and warfighter training, among other fields. Dr. Kingsley led the design teams for Exponent's MARCbot IV-V and V robotic platforms. Additionally, he led Exponent's efforts in the DARPA Improv program, which sought to identify and remediate potential vulnerabilities in national security. Dr. Kingsley also holds a master's degree in military studies with a focus on the interface between technology and asymmetric warfare.

While a graduate student at Case Western Reserve University, Dr. Kingsley was responsible for the design and fabrication of a cockroach-inspired walking robot that used muscle-like pneumatic actuators.

During this time, he was supported by a Graduate Student Research Program fellowship with NASA Jet Propulsion Lab, where he designed and fabricated two mechanical arms that were later used to test a cerebellum based control network.

Academic Credentials & Professional Honors

M.A., Military Studies - Capstone Option, American Military University, 2016

Ph.D., Mechanical Engineering, Case Western Reserve University, 2005

M.S., Mechanical Engineering, Case Western Reserve University, 2001

B.S., Mechanical Engineering, Case Institute of Technology, 1999

Graduate Student Research Program Fellowship (NASA JPL), 2002-2004

Licenses and Certifications

Professional Engineer Mechanical, Arizona, #57498

PADI Certified Open Water Scuba Diver

Patents

Patent 6,964,309: Vehicle with compliant drive train (with R.D. Quinn, J.T. Offi, and R.E. Ritzmann).

Publications

Swart J, Harrington R, Rajamani V, Kingsley D. The Quiet Transformation of Vehicles without Computers, to Computers on Wheels. IEEE Symposium on Product Compliance Engineering, San Jose, CA, 2017

Kingsley DA, Quinn RD, Ritzmann RE. A cockroach inspired robot with artificial muscles. International Conference on Intelligent Robots and Systems (IROS) Beijing, China, October 2006.

Kingsley DA, Quinn RD, Ritzmann RE. A cockroach inspired robot with artificial muscles. 2nd International Symposium on Adaptive Motion of Animals and Machines (AMAM '03) Kyoto, Japan, March 2003.

Kingsley DA, Quinn RD. Fatigue life and frequency response of braided pneumatic actuators. IEEE International Conference on Robotics and Automation (ICRA'02), Washington, D.C., May 2002.

Mangan EV, Kingsley DA, Quinn RD, Chiel HJ. Development of a peristaltic endoscope. IEEE International Conference on Robotics and Automation (ICRA'02), Washington, D.C., May 2002.

Mangan EV, Kingsley DA, Quinn RD, Chiel HJ. Development of a peristaltic endoscope. IEEE International Conference on Robotics and Automation (ICRA'02) Video Proceedings, Washington, D.C., May 2002.

Offi J, Quinn RD, Kingsley DA, Ritzmann RE. Its got Whegs. IEEE International Conference on Robotics and Automation (ICRA'02) Video Proceedings, Washington, D.C., May 2002.

Offi J, Quinn RD, Kingsley DA, Ritzmann RE. Its Got Whegs. 2002 IEEE International Conference on Robotics and Automation (ICRA'02) Video Proceedings, Washington, D.C., May 2002.

Quinn RD, Allen TJ, Horchler AD, Morrey JM, Lambrecht B, Offi JT, Rutter BL, G.M. Nelson, Bachmann

RJ, Kingsley DA, Birch MC, Pollack AJ, Ritzmann RE. Highly mobile scalable UGVs for near term and far term missions. Proceedings, SPIE Vol. 5083 Unmanned Ground Vehicle Technology V Video Session.

Bachmann RJ, Quinn RD, Kingsley DA, Ritzmann RE. A Cockroach robot with artificial muscles. Proceedings, 5th International Conference on Climbing and Walking Robots (CLAWAR 2002), Paris, France, September 25-27, 2002.

Quinn RD, Kingsley DA, Offi JT, Ritzmann RE. Improved mobility through abstracted biological principles. IEEE International Conference on Intelligent Robots and Systems (IROS'02), Lausanne, Switzerland, 2002.

Quinn RD, Nelson GM, Bachmann RJ, Kingsley DA, Offi J, Ritzmann RE. Insect designs for improved robot mobility. Proceedings, Climbing and Walking Robots Conference (CLAWAR01), Karlsruhe, Germany, September 2001.

Kingsley DA. Design and manufacture of a passively stabilized monopedic robot. AIAA 38th Aerospace Science Meeting, Reno, NV, January 10-13, 2000.