



Robotics Virtual Open House



TOYOTA RESEARCH INSTITUTE

Speaker Biographies



Dr. Gill Pratt

Dr. Gill Pratt is the Chief Executive Officer of Toyota Research Institute (TRI), where he directs research to create new capabilities for Toyota in Active Safety, Automated Driving, Robotics, and other Human Amplification technologies. He also serves as Chief Scientist and Executive Fellow for Research of Toyota Motor Corporation (TMC) and Executive Advisor of Toyota Central R&D Labs., Inc. (TCRDL), both in Japan. Prior to joining TRI as its founding CEO in January 2016, Dr. Pratt served as an Executive Technical Advisor to Toyota Motor Corporation.

Dr. Pratt previously led the Robotics Challenge, Robotics Research, and Neuromorphic Computing research programs for the U.S. Defense Advanced Research Projects Agency (DARPA), where he served as a program manager in the Defense Sciences and Tactical Technology Offices from January 2010 through August 2015.

Dr. Pratt was an Associate Professor of Electrical Engineering and Computer Science and Director of the Leg Lab at the Massachusetts Institute of Technology (MIT). Subsequently, he was a founding Professor of Electrical and Computer Engineering and Associate Dean of Faculty Affairs and Research at Franklin W. Olin College of Engineering. Dr. Pratt's academic research focused on robotics and intelligent systems. Specific areas of interest included interfaces that significantly enhance human/machine collaboration, mechanisms and control methods for enhanced mobility and manipulation, low impedance actuators, the application of neuroscience techniques to robot perception and control, and the impact of Robotics and AI on society. Dr. Pratt holds several patents in series elastic actuation and adaptive control.

Dr. Pratt earned Doctor of Philosophy (1990), Master of Science (1987), and Bachelor of Science (1983) degrees in Electrical Engineering and Computer Science from MIT. His Ph.D. thesis was in the field of spiking computation in natural and artificial neural systems. Dr. Pratt also worked for the Physics and Computer Science Research Departments of Bell Telephone Laboratories in Murray Hill, New Jersey.



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Kelly Kay

Kelly Kay is Executive Vice President and Chief Finance Officer responsible for Finance, Human Resources, IT, Legal/Compliance, Facilities and overall operations. Kelly joined TRI in February 2017 and formerly served as the Chief Operating Officer.

Prior to TRI, Kelly served as the Vice President of Business Operations at Lyft, Inc., where she built and led the teams responsible for Regulatory Compliance, Audit & Reporting, Payments & Fraud, and Airport Operations. She also served as the Chief Operating Officer and President of YapStone, Inc., a leading electronic payments company in the real property space.

Prior to serving as an operational leader, Kelly was an attorney for more than 19 years and held roles as a General Counsel, Associate General Counsel & Head of Compliance, as well as a leader in public policy and government relations at companies such as MasterCard, eBay, PayPal and J.P. Morgan (previously Banc One). Kelly has spent her career designing solutions to bring traditional, highly regulated products and services into the digital age in a compliant and operationally friendly manner. Her key areas of focus include ride-sharing, autonomous technologies regulation, online payments, online financial services, privacy, anti-money laundering, and online auctions.

Kelly is an independent board member for USA Technologies and an internal Board member of Toyota AI Ventures, Toyota's corporate VC with over \$200M under management. She attended The Ohio State University and Capital University Law School where she graduated Summa Cum Laude.



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Max Bajracharya

Max Bajracharya is Vice President of Robotics at Toyota Research Institute (TRI), where he leads TRI's robotics effort to develop fundamentally new robotics capabilities to enable robots to empower, amplify, and improve the quality of life of people in an increasingly aging society. Previously at TRI, Max was a Director of Robotics, leading the Mobile Manipulation Technology team to combine in-situ and fleet learning to enable robots to perform complex mobile manipulation tasks in unstructured human environments.

Prior to joining TRI, Max was the autonomy technical team lead for a confidential robotics project at X, Alphabet's "Moonshot Factory," focusing on mobile manipulation and machine learning. He was the software technical team lead and system architect of a confidential mobile manipulation consumer robot project as part of Google Robotics, and the perception lead for Boston Dynamics' quadruped and humanoid robots, while part of Google.

From 2001–2014, Max was a Member of Technical Staff and group leader of the Computer Vision group at the NASA Jet Propulsion Laboratory, Caltech. His initial focus was on developing advanced autonomous technology for the Mars rovers, which was used on the 2003 Mars Exploration Rover and 2011 Mars Science Laboratory missions. He was a principal investigator, task lead, system architect, and project manager for many NASA and US Department of Defense. He worked on applied research tasks resulting in technology transfer to space missions and terrestrial systems. Subsequently, he led the development, integration, fielding, and deployment of advanced perception, manipulation, and mobility algorithms for autonomous robots for the DARPA Robotics Challenge (DRC), Legged Squad Support System (LS3), Autonomous Robotic Manipulation Software (ARM-S), and Learning Applied to Ground Robots (LAGR) programs, among others, as well as the Army Research Lab (ARL) Robotic Collaborative Technology Alliance (RCTA) and Future Combat Systems Autonomous Navigation System (FCS ANS).

Max graduated with a B.S. and M.Eng. in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology in 2001.



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Russ Tedrake

Russ Tedrake is the Vice President of Robotics Research at Toyota Research Institute (TRI). Tedrake manages a team devoted to producing a world-class simulation capability for TRI with a simple vision: What if we could develop real-world robots and autonomous vehicles completely in software (and trust that they will work in the real world)? Tedrake's team also pursues fundamental research on "Enabling Technologies" for TRI Robotics, with a specific focus on manipulation and soft robotics.

Tedrake is also the Toyota Professor at the Massachusetts Institute of Technology (MIT) in the Department of Electrical Engineering and Computer Science, Mechanical Engineering, and Aero/Astro, and he is a member of MIT's Computer Science and Artificial Intelligence Lab (CSAIL). He received a B.S.E. in Computer Engineering from the University of Michigan in 1999, and a Ph.D. in Electrical Engineering and Computer Science from MIT in 2004.

Tedrake is the Director of the MIT CSAIL Center for Robotics and was the leader of MIT's entry in the DARPA Robotics Challenge. He is a recipient of the NSF CAREER Award, the MIT Jerome Saltzer Award for undergraduate teaching, the DARPA Young Faculty Award in Mathematics, the 2012 Ruth and Joel Spira Teaching Award, and was named a Microsoft Research New Faculty Fellow. His research has been recognized with numerous conference best paper awards, including ICRA, Robotics: Science and Systems, Humanoids, Hybrid Systems: Computation and Control, as well as the inaugural best paper award from the IEEE RAS Technical Committee on Whole-Body Control.



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Steffi Paepcke

Steffi Paepcke is a Senior User Experience Designer at Toyota Research Institute (TRI). Paepcke joined TRI in 2016 to lead UX research and design support for all of TRI's robotics teams. To advance TRI's mission of developing robots to help improve the quality of life for an aging population, Paepcke conducts research identifying the needs of this population and translates those needs into solutions and engineering requirements. Additionally, she designs and tests robot user interfaces, advocating for the user's experience throughout the development process.

Paepcke earned a BA in Psychology at the University of California, Santa Cruz and a Master of Human-Computer Interaction from Carnegie Mellon University. She has held user experience design and human-robot interaction researcher positions in leading industry and academic organizations, including Willow Garage and the Open Source Robotics Foundation (now Open Robotics), which she co-founded.



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Dan Helmick

Dan Helmick is the co-lead of the Robotics Fleet Learning Team at Toyota Research Institute (TRI) where his team is responsible for developing capabilities for mobile manipulators in the home. The team's mission is to help solve the challenges faced by an aging society. Helmick brings over two decades of experience developing software and hardware for autonomous mobile manipulators.

Prior to joining TRI, Helmick worked at Boston Dynamics on humanoid robots and at Google X where his team developed mobile manipulators to provide utility and add value in real-world, human environments. Before that, he worked at NASA Jet Propulsion Laboratory for fifteen years, where he acted as the principal investigator and task lead for many pivotal NASA and DARPA robotics research projects and the Mars Science Laboratory mission (the Curiosity rover).

Helmick earned a B.S. in Mechanical Engineering from Virginia Tech and an M.S. in Mechanical Engineering from Georgia Tech.



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Jeremy Ma

Jeremy Ma is the co-lead of the Robotics Fleet Learning Team at Toyota Research Institute (TRI) where his team is responsible for developing capabilities for mobile manipulators in the home. The team's mission is to help solve the challenges faced by an aging society. Ma has over fifteen years' experience working on a wide range of robots ranging from autonomous vehicles to 2-armed manipulators to 4-legged robots.

Prior to joining TRI, Ma held various technical positions at Apple and the NASA Jet Propulsion Laboratory, where he focused on DARPA projects like Grand Challenge, Urban Challenge, ARM-S, LS3, and Robotics Challenge.

Ma holds a B.S. in Mechanical Engineering from the University of California Los Angeles, an M.S. in Mechanical Engineering from Caltech, and a Ph.D. in Mechanical Engineering from Caltech. The inspiration for his work comes from his two boys who constantly remind him how easy it is for humans to learn things and how hard it is to get a robot to do the same.