Toyota Research Institute Launches Next Phase of Collaborative Research with Diverse Roster of World-Class Academic Institutions

January 26, 2021

LOS ALTOS, Calif., (**January 26, 2021**) – The Toyota Research Institute (TRI) announced today that it has selected 13 additional academic institutions to participate in the next five-year phase of its collaborative research program. These universities join MIT, Stanford and the University of Michigan which have worked with TRI over the last five years to expand the body of research into artificial intelligence (AI) with the goal of amplifying the human experience.

The next five-year phase includes investing more than $75 million in the academic institutions, making it one of the largest collaborative research programs by an automotive company in the world.

"Our first five-year program pushed the boundaries of exploratory research across multiple fields, generating 69 patent applications and nearly 650 papers," said Eric Krotkov, TRI Chief Science Officer who leads the university research program. "Our next five years are about pushing even further and doing so with a broader, more diverse set of stakeholders. To get to the best ideas, collaboration is critical. Our aim is to build a pipeline of new ideas from different perspectives and underrepresented voices that share our vision of using AI for human amplification and societal good."

The following universities completed a comprehensive proposal submission and review process and will participate in the next phase of TRI's collaborative research program:

1. Carnegie Mellon University
2. Columbia University
3. Florida A&M University-Florida State University College of Engineering
4. Georgia Institute of Technology (Georgia Tech)
5. Indiana University
6. Massachusetts Institute of Technology (MIT)
7. Princeton University
8. Smith College
9. Stanford University
10. Toyota Technological Institute at Chicago (TTIC)
11. University of California, Berkeley
12. University of Illinois
13. University of Michigan
14. University of Minnesota
15. University of Pennsylvania
16. University of California, Los Angeles (UCLA)

Through this program, TRI will lead 35 joint research projects focused on achieving breakthroughs around difficult technological challenges in TRI's research areas: Automated Driving, Robotics and Machine Assisted Cognition (MAC).

The primary objectives of the joint research projects are to:

- Contribute significant new knowledge and understanding to the artificial intelligence field.
- Demonstrate the potential to radically advance state of the art concepts into possible use cases.
- Promote the transfer of knowledge through the meaningful exchange of scientific and technical information between TRI researchers and academic partners.
- Create and share infrastructure, including data and software, to further research, promote reproducibility and support education.

The first phase of the program, conducted over the last five years, sponsored 98 projects involving about 100 faculty members and over 200 students. These projects yielded important technology advances for ongoing TRI

projects, including transfer learning in computer vision, self-supervised learning on contact-rich tasks, and techniques for mimicking human behavior in various driving interactions. The projects generated several awards for published papers at leading conferences including the CVPR 2018 Best Paper, an ICRA 2019 Finalist Best Paper, the ICRA 2019 Best Paper, and the 2020 IEEE Robotics and Automation Letters Best Paper Award. Additionally, the close collaborations resulted in the recruitment of several new TRI team members.

This next five-year phase focuses investments in projects TRI researchers have a keen academic interest in exploring to create more value and impact for TRI. Each project features a TRI researcher as a co-investigator who will work with the university partner. This approach directly engages TRI researchers with the academic AI partners and ensures that the research contributes to the TRI mission.

TRI is also offering Young Faculty Researcher (YFR) projects to form partnerships with more junior (typically pre-tenure) faculty members. Whereas joint projects have TRI pursuing a specific direction and reaching technical milestones along the way, the YFR projects are specifically designed to support promising tenure stream faculty members, enabling them to explore broadly, inquire deeply, and address higher-risk, higher-payoff ideas. In YFR projects, TRI invests in the researcher and provides them with the freedom and flexibility to pivot from one direction to another.