Toyota and Google Cloud Partner to Bring AI-Powered Speech Services to Toyota and Lexus Vehicles

Google Cloud's new product Speech On-Device enables AI-driven speech services on embedded devices regardless of internet connectivity

Toyota to leverage vehicle-native Speech On-Device in next-generation multimedia system

SUNNYVALE, Calif. and PLANO, Texas, Oct. 11, 2022 /PRNewswire/ -- Toyota and Google Cloud today announced an expanded partnership that brings together Toyota and Lexus next-generation audio multimedia systems and Google Cloud's AI-based speech services. Customers can now experience the first results of the partnership in the latest generation Toyota Audio Multimedia and Lexus Interface infotainment systems, including in 2023 models like the Toyota Corolla family, Tundra, Sequoia and Lexus NX, RX and all-electric RZ.

With the growing popularity of voice assistants in everyday life, consumers increasingly expect accurate and consistent voice interactions.[1] The machine learning capabilities required to provide high-quality speech results have traditionally relied on a connection to the cloud, as natural language processing is extremely complex and can require specialized computers.

Vehicles equipped with Toyota's latest-generation Automotive Grade Linux-based Audio Multimedia and Lexus Interface infotainment systems already leverage Google Cloud's Speech-to-Text service to accurately perform automatic speech recognition for in-vehicle queries. Toyota's Voice Assistant, which leverages technology from Google Cloud, was co-developed by Toyota Motor North America Connected Technologies and Toyota Connected organizations since 2018. The partnership highlights the AI and machine learning innovation brought forth in the latest Toyota and Lexus infotainment systems.

The strength of the partnership announced today is that Toyota's next-generation system will no longer require an internet connection for natural-speech functions.

Driving Future Innovation Together

Expanding the collaboration between Toyota and Google Cloud, the partnership aims to drive future innovation with the addition of Speech On-Device–a new Google Cloud AI product that equips embedded devices with the same powerful, AI-based speech recognition and synthesis available in the cloud, regardless of internet connectivity–to future Toyota and Lexus vehicles.

The future vehicle-native Speech On-Device will enable voice requests to be served directly by vehicles' multimedia system processors, without the need for internet connectivity, to power voice queries in select vehicles. Now, with voice interactions served locally instead of by the cloud, drivers will not have to worry about a tunnel or dead zone affecting voice commands.

"Today's announcement represents refinement that comes with years of collaboration between Toyota and Google Cloud to perfect how our technologies work with one another," said Steve Basra, group vice president, Connected Technologies, Toyota Motor North America, and CEO and president of Toyota Connected North America. "We are excited to announce this next step in development for in-vehicle voice AI, as it will bring even more benefits to Toyota and Lexus drivers, including speed and ease of use."

Google's Speech On-Device Technology

Speech On-Device builds on innovations from Google Assistant and Google Pixel that enable fully featured speech models–comparable in quality to those hosted in the cloud–to run locally on small devices at the edge with only a fraction of the model size and computing requirements. The new product makes it possible for Google Cloud customers to bring high-quality speech services to disconnected environments, presenting new opportunities across a variety of use cases, from cars to televisions and even kiosks.

"By working closely with Toyota to understand its in-vehicle device requirements and capabilities, we were able to provide server-like quality while using only a small fraction of the processing power to ensure the best possible experience for drivers," said Umesh Vemuri, VP, Global Strategic Customers & Industries, Google Cloud.

With Toyota's next-generation multimedia system in development upon the brand's native platform, vehicle-embedded Speech On-Device will be used as a component of the nextgen Toyota Voice Assistant. These

technologies combined allow voice requests to be served directly by vehicles' multimedia system processors, without the need for internet connectivity, to power voice queries in select vehicles.

Speech On-Device is available for select Google Cloud customers. For pricing and availability, Google Cloud customers should contact their sales representatives.

Additional Resources

- Keep up with the latest Google Cloud news on our newsroom and blog.
- Learn more about the partnership and Speech On-Device in a session with Toyota today at Next '22.

About Toyota

Toyota (NYSE:TM) has been a part of the cultural fabric in the U.S. for more than 60 years, and is committed to advancing sustainable, next-generation mobility through our Toyota and Lexus brands, plus our nearly 1,500 dealerships.

Toyota directly employs more than 39,000 people in the U.S. who have contributed to the design, engineering, and assembly of nearly 32 million cars and trucks at our nine manufacturing plants. By 2025, Toyota's 10th plant in North Carolina will begin to manufacture automotive batteries for electrified vehicles. With more electrified vehicles on the road than any other automaker, a quarter of the company's 2021 U.S. sales were electrified.

To help inspire the next generation for a career in STEM-based fields, including mobility, Toyota launched its virtual education hub at www.TourToyota.com with an immersive experience and chance to virtually visit many of our U.S. manufacturing facilities. The hub also includes a series of free STEM-based lessons and curriculum through Toyota USA Foundation partners, virtual field trips and more. For more information about Toyota, visit www.ToyotaNewsroom.com.

About Toyota Connected, Inc.

Based in Plano, Texas, Toyota Connected North America (TCNA) was established in 2016 to drive Toyota's global efforts for an intelligent mobile society. With big data collected from vehicles and analyzed on a cloud platform, Toyota Connected humanizes the driving experience by providing customers secure, seamless and contextual services, elevating the customer experience while benefiting dealers, distributors, and partners. At the heart of TCNA is Toyota's belief in human-centered mobility and a fundamental commitment to personal privacy.

About Google Cloud

Google Cloud accelerates every organization's ability to digitally transform its business. We deliver enterprise-grade solutions that leverage Google's cutting-edge technology – all on the cleanest cloud in the industry. Customers in more than 200 countries and territories turn to Google Cloud as their trusted partner to enable growth and solve their most critical business problems.

[1] https://www.pwc.com/us/en/services/consulting/library/consumer-intelligence-series/voice-assistants.html

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