LG UNVEILS NEW FRAMEWORK FOR ADVANCING AI TECHNOLOGY AT CES 2020

LG's CTO Outlines Future Roadmap for AI Development
Through Structured "Levels of AI Experience" Framework

LAS VEGAS, Jan. 6, 2020 — At CES® 2020, LG Electronics (LG) President and Chief Technology Officer Dr. I.P. Park unveiled the framework for the future of artificial intelligence (AI) development with the title of *"Levels of AI Experience: the Future of AI and the Human Experience"*. The conceptual framework aligns with the LG ThinQ brand and its ambitious vision to transform the daily experience by connecting all aspects of people's lives with intelligent touchpoints.

This far-reaching plan creates a clear roadmap for AI where the ultimate destination is a cohesive system comprising products and services that can make anywhere feel like home. Speaking at the Mandalay Bay Convention Center in Las Vegas, Dr. Park explained that, amidst a wave of AI-related ideas and concepts, it is important to share a structured framework for the development of AI across the industry so that we may create a meaningful impact on the lives of customers we serve.

Dr. Park was joined on stage by Jean-François Gagné, co-founder and CEO of Element AI, the Montreal-based company that built its reputation on effective AI implementation. Together, they discussed how the framework was developed and their responsibility as an industry when developing future technologies will play a transformative role and explained four levels of AI experience (AIX) – Efficiency, Personalization, Reasoning and Exploration – which are anchored in significant jumps in technical capability and its application.

Efficiency, the first level, is where specific device and system functions can be automated through simple commands, which is currently possible with most voice recognition and AI-enabled products on the market today. At this level, the AI

automatically adjusts performance in relation to pre-established sensory input parameters, maximizing efficiency in user interactions. An example of first-level AI is the LG ThinQ air conditioner that has a smart sensor to detect the presence of people in a room and adjusting the temperature and airflow accordingly, Dr. Park explained.

The next level, Personalization, focuses on pattern learning to optimize and personalize device functions, Gagné said. AI-powered devices and services at this level can accumulate data from interactions with the environment and users, recognize patterns and use them to improve their ability to effectively perform tasks and simplify user interactions. Dr. Park described how LG's next-generation R9 robot vacuum cleaner will be able to learn from mistakes (such as getting stuck in gaps and corners) by remembering spatial patterns.

Reasoning, the third level, envisions an AI that uses causality learning through the collective intelligence of a system made up of different devices and services. By perceiving the cause of certain patterns and behaviors, AI at this level can better predict and promote positive outcomes for users. "Here, we can leverage the diversity of our product portfolio because we'll need many intelligent touchpoints that interact with the user and gather information to understand the 'why' and establish causality," noted Dr. Park.

Although still far in the future, level four, Exploration, is "the ultimate destination for LG's AI," Dr. Park concluded. Using a concept called Experimental Learning based on the scientific method, AI-enabled systems will be able to develop new capabilities through forming and testing hypotheses to uncover new inferences, enabling them to learn and improve, adding more value to users' lives.

"As pioneers in the field of AI it is our responsibility to consider the importance of the Human Experience whilst pushing the boundaries of AI research and development," added Element AI's Gagné. "Together with LG Electronics we hope that this work

helps to set forth standards and principles that guide AI practitioners to consider a human centric approach when building the future"

The announcement of AIX levels was welcomed by a score of leading figures in the field, across various industries as well as academia. "It is our responsibility to drive the development of the field of AI towards a future in which the technology is being harnesses in a manner that is beneficial for both individuals and society as a whole," said Yoshua Bengio, the Turing award winner, founder and scientific director of Mila, the research institute partnership between the Université de Montréal and McGill University with Polytechnique Montréal and HEC Montréal.

Dr. Park also previewed compelling AI innovations that will be featured in LG's massive exhibition space at CES 2020, opening January 7. Embodying the company's *Anywhere is home* concept, the LG ThinQ Zone will bring to life a truly connected lifestyle that extends beyond the front door, demonstrating how the company's AI products and services align with different aspects of everyday life to offer unprecedented customer value.

The LG ThinQ Home experience begins with Smart Door, which verifies visitors with both facial recognition and vein authentication before unlocking. Biometrics also are required to access the fresh food storage facility, a secure space for delivered groceries. When exiting, you can use a screen on the inside of the door that displays useful information such as weather and traffic conditions. When set to depart mode, the Smart Door instructs LG ThinQ appliances to go into low power when all residents have left the house.

In the Connected Car Zone, LG will demonstrate a more personalized in-car experience that allows drivers and passengers to take a piece of home on the road with them. LG's connected car solution is based on its webOS Auto platform and was developed in partnership with leading auto seat manufacturer, Adient. Inside the vehicle there are OLED displays on which users can continue enjoying the TV programs and movies they

started watching at home. The Personal Sound Zone delivers a unique multimedia experience for each rider while the voice-activated Virtual Personal Assistant isolates and recognizes voice commands even over loud music and conversations.

The ThinQ Fit Collection Zone will allow visitors to experience virtual fashion without having to step into a fitting room. LG ThinQ Fit^{TM}, an evolution of LG's original Smart Mirror concept, uses 3D cameras to accurately measure the user's body to generate a realistic avatar for virtual fittings. The technology can use big data to offer style suggestions and links to platforms that allow for direct purchases of clothes.

And what would CES be without LG robots? LG's robotic solutions will impress attendees of the show with their culinary skills, efficiency and first-class hospitality at CLOi's Table Zone, a futuristic restaurant where LG CLOi robots manage the entire operation from taking orders, cooking, serving and cleaning. Potential diners would make reservations remotely via the ThinQ app and browse the menu via a smart speaker, smart TV or smartphone.

Experience all this and more at LG's CES booth #11100 in Central Hall of the Las Vegas Convention Center from January 7-10. Follow all of LG's exciting CES announcements and activities on social media using #LGCES2020.

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LG Electronics Inc. is a global innovator in technology and manufacturing with operations in 140 locations and a workforce of over 70,000 around the world. With 2018 global sales of USD 54.4 billion, LG is composed of five companies – Home Appliance & Air Solution, Home Entertainment, Mobile Communications, Vehicle Component Solutions and Business Solutions. LG is a world-leading producer of TVs, refrigerators, air conditioners, washing machines and mobile devices, including premium LG SIGNATURE and LG ThinQ products featuring artificial intelligence. For the latest LG news, go to www.LGnewsroom.com.

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