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For immediate release

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Yokohama Rubber develops system that uses AI to predict values of key tire characteristics

Tokyo—The Yokohama Rubber Co., Ltd., announced today that it has developed a proprietary system that utilizes AI to predict the values of key tire characteristics. The Company began using the system this month. Yokohama Rubber expects the system's ability to conduct a large number of virtual experiments will enable it to accelerate new tire development, reduce development costs, and develop better performing tires. The system also will make it easier for less-experienced engineers to develop new tire designs.

The system was developed under Yokohama Rubber's new AI utilization concept, HAICoLab*, which was launched in October 2020. The system uses AI to predict values for key tire characteristics based on data input by tire designers, including specifications-related data for such key tire design parameters as structure and shape, the physical properties of compounds and other material-related data, and evaluation conditions. The new system reduces the deterioration of AI prediction accuracy that tends to occur during tire design. As the number and types of possible design parameters differ depending on the tire's internal structure, it is necessary to create separate databases used for AI learning according to the tire's structural features. The use of such narrowly composed learning data can sometimes reduce AI prediction accuracy. However, the system's prediction accuracy is improved by transferring AI prediction ability learned in other related areas (transfer learning).

* An acronym for Humans and AI Collaborate for digital innovation. It also has the meaning of a laboratory for joint research by humans and AI.

Yokohama Rubber is now applying a system it developed in December 2020 that utilizes AI to predict the physical properties of rubber compounds used in its tires. Using this earlier developed system together with the recently developed system for predicting the values of specific tire characteristics will enhance Yokohama Rubber's development of a wide variety of new tires.

HAI CoLab is a new concept aimed at fostering digital innovations by facilitating collaborative efforts that merge human inspiration and creativity with the enormous data processing capability of AI. Yokohama Rubber aims to acquire new knowledge by creating and collecting data based on hypothetical conditions set by humans and then applying AI to predict, analyze and then search for the most optimal result. Yokohama Rubber has been advancing technological developments by using AI in its material and tire design and development processes. For example, in 2017 Yokohama Rubber unveiled a new rubber material development technology that applies materials informatics and a tire design technology that applies informatics technology. Under its HAI CoLab concept, Yokohama Rubber is using AI to develop innovative products and services as well as processes. Through this effort, Yokohama Rubber will contribute to the realization of “Society 5.0”, a future society that will enhance people’s experiences and take advantage of innovative technologies such as AI and IoT, as advocated by the Japanese government’s Cabinet Office.

<HAI CoLab conceptual diagram>

