ROOTING FOR ROBOTS AT THE WINTER OLYMPICS

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THE HANDOFF: The robot DRC-Hubo+ receives the Olympic flame from UCLA professor Dennis Hong.

41,400: NUMBER OF INDUSTRIAL ROBOTS SOLD IN SOUTH KOREA IN 2016, SECOND ONLY TO CHINA
It’s a stressful time for everyone involved. “I have more anxiety than excitement,” says Jun-ho Oh, the director of the Institute for Robotics at the Korea Advanced Institute of Science and Technology (KAIST), who led government officials in managing robotics for the games.

Most of these automated helpers will take on highly visible roles and interact with the public. Which means they must be able to, among other things, maneuver through crowded spaces and know when to hit the brakes. Any mistakes they make will be in the public eye.

“This is an opportunity for them to showcase what they’re working on,” says Raffaello D’Andrea, a professor of dynamic systems and control at ETH Zurich. “This technology is far enough along that you can actually deploy robots and have them do something interesting.”

Oh has three rules for designing eye-catching, crowd-pleasing robots that are also safe and reliable. Call them Oh’s Three Laws of Olympic Robotics. First, he says, the robot must not make trouble. His second rule is that it must do something new, even if that just means teaching an existing robot new tricks. Third, the robot must be useful.

One brand new robot that will appear at the games is a robotic version of this year’s Olympic mascot, the white tiger named Soohorang, with which visitors may pose for photos. And in a sister event to the Olympics, 10 humanoid skiing robots, each standing a meter tall, will compete to navigate a 200-meter slope. Each roboskier, designed by companies and universities, completed trial runs in the months leading up to the games and used the data it collected to teach itself how best to maneuver through gates on the course.

Elsewhere, at the International Broadcast Center, small schools of autonomous robots with waterproof skin will swim together in underwater formations to entertain passersby. These aquatic bots resemble goldfish in their appearance and movements. They operate at depths of up to 2 meters and determine their position with depth and pressure sensors. If one gets separated, operators can guide it back to the group by means of a built-in radio antenna.

Thanks to Oh’s third rule, there will also be plenty of useful robots to see this month. Big, domed cleaning robots over a meter tall and a meter in diameter will sweep 900 square meters of floor per hour before finding their way back to charging stations using cameras and lidar.

When asked which robot he was most excited to see at the games, though, Oh named Hubo, the bipedal, humanoid robot that his team at KAIST has developed to assist with disaster recovery. The latest version, DRC-Hubo+, can autonomously navigate dangerous situations and discern items of interest. Before the games, it carried the Olympic torch for a few minutes before cutting through a wall to pass the flame to Oh himself.

Oh also thinks spectators will enjoy watching a massive mural-painting robot, consisting of a huge dot-matrix printer that will create images based on the previous day’s events—perhaps adding new gold medal winners to a collage.

But robots can’t yet perform every Olympic-size task. Early press releases from Korea’s Ministry of Trade, Industry, and Energy—which oversees the entire Olympics robots initiative—spoke of robotic security. A year before the games, the ministry was still exploring options for robot patrols. Those plans were eventually scrapped. Oh says one big problem with the security robots was finding the right partners. Building high-quality security robots that could securely connect to existing wireless networks would have required companies or research institutes to partner with military agencies, but the budget wasn’t large enough to fund such development.

Instead, the ministry shifted its emphasis to the robots that can perform services or just spark a visitor’s curiosity. Now, those robots are ready for their big debut. More than anything, Oh says, “I hope people will like them.”

—MICHAEL KOZIOL