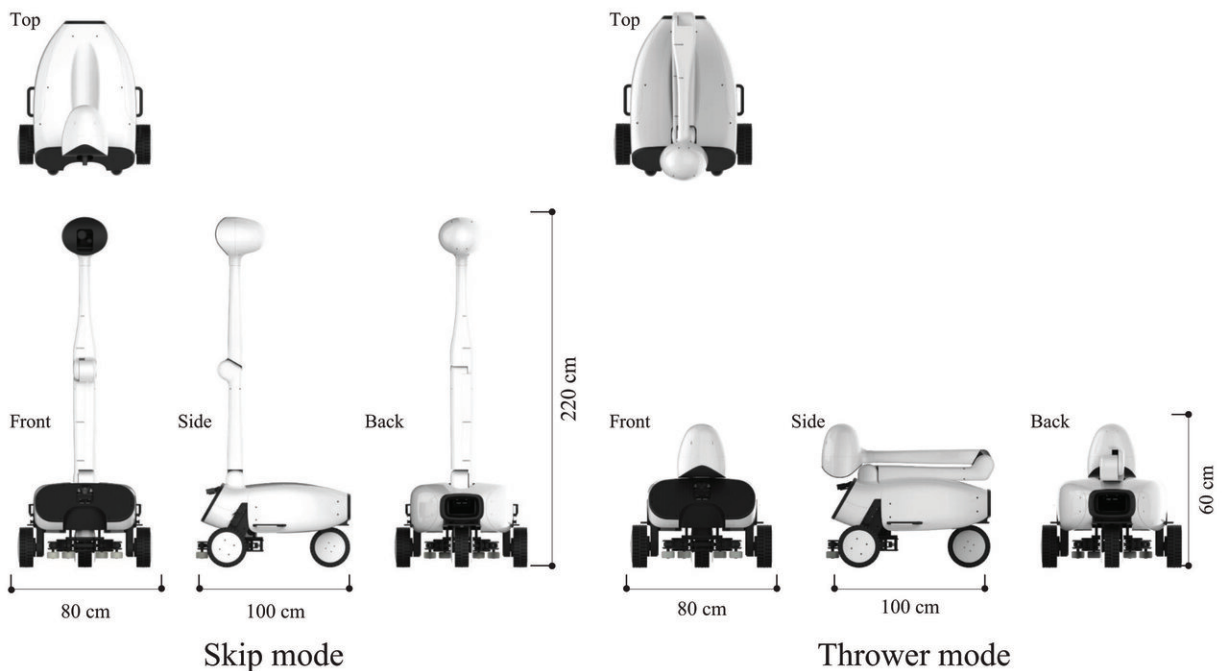


Curling robot able to beat some professional players

September 24 2020, by Bob Yirka



Curly in its two configurations: skip mode (left) and thrower mode (right).
Credit: Won et al., *Sci Robot.* 5, eabb9764 (2020)

A combined team of researchers from Korea and Germany has built an AI-based curling robot that is able to compete at a professional level. In their paper published in the journal *Science Robotics*, the group describes how their robot was built, how it was trained and how well it performed when matched against professional human players. Johannes Stork with

Örebro University has published a [Focus piece](#) discussing the work by the team in the same journal issue.

Curling is a sport played by two teams on an ice surface. Members from the two teams take turns pushing and spinning a large polished [stone](#) (17 and 20 kg) down a straight course toward a center target approximately 45 meters away. As play continues, players attempt to knock their opponents' stones out of the target area. After all of the players have had their turns, points are calculated based on stone positioning at the end of the match. Also, during play, teammates of the stone thrower use brooms to brush the ice to impact the path and speed of the stone. Between throws, teammates discuss strategy.

Curling requires physical skills and an ability to strategize quickly. In this new effort, the researchers have built a robot that can figure out where to throw a stone in order to win a match and to throw the stone down the course. Broom-wielding robots were not included, though there were cameras affixed near the target area for the AI system to use in calculating the next throw. The researchers taught the AI system behind the robot's intelligence using simulated [curling](#) games.

The researchers tested their robot, which they named Curly, by pitting it against a professional women's team and a nationally ranked wheelchair team. The robot won three out of four rounds. The researchers note that the pairing with the wheelchair team was the best test of their system because the teams did not have ice brushers. They note that the robot was also tested as a teammate with human players. The [robot](#) threw the stone and the humans brushed the ice, increasing the accuracy of throws.

More information: Dong-Ok Won et al. An adaptive deep reinforcement learning framework enables curling robots with human-like performance in real-world conditions, *Science Robotics* (2020). [DOI:](#)

[10.1126/scirobotics.abb9764](https://doi.org/10.1126/scirobotics.abb9764)

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