The Robots Have Arrived… to Judge Gymnastics

The 2019 World Artistic Gymnastics Championships marked a significant milestone in the gymnastics world, as it was the first time that artificial intelligence technology was used to help calculate gymnasts' scores.[1] An artificial intelligence system from the Japanese company Fujitsu used "a set of three-dimensional laser sensors" to collect movement data from the competing gymnasts and analyze the gymnasts' skeletal positions, speeds and angles as they competed.[2] As this technology is quite new, the artificial intelligence system was only used in three events: pommel horse, rings, and vault. Within these events, the human judges only used the system to confirm difficulty scores when a gymnast challenged their score or when there were large deviations in the judges' scores.[3]

The use of robots to judge gymnastics has garnered praise and criticism from gymnastics coaches. Some say that the artificial intelligence system can help eliminate bias and subjectivity in judging.[4] However, others worry that the system could be vulnerable to hackers and limit the creativity and artistry of the gymnasts.[5] Another important potential issue involves data protection.

Before the 2019 Gymnastics Championships, competitors were asked to participate in a voluntary body dimension measurement procedure, where their bodies and movements were scanned to ensure that the Fujitsu system judged the competitors with maximum accuracy.[6] Over 90% of the competitors agreed to participate in this procedure, and those who did not were judged using standardized body measurements, although Fujitsu stressed that it is better to participate in the body dimension measurement procedure.[7] This led to some concerns about data privacy, although the International Gymnastics Federation stated that all athlete information collected at this competition would be discarded at a predetermined expiration date.[8]

Even so, this could create problems for athletes who do not want their body measurements and movements to be scanned. There is a clear benefit to participating in the body dimension measurement procedure. At the 2019 Gymnastics Championships, several competitors had their scores increased upon review thanks to this participating in this procedure.[9] Additionally, although much of how Fujitsu's artificial intelligence system works is unknown, Fujitsu's website mentions that a key part of the system involves matching the captured data with previously stored data, further suggesting that a gymnast's score will be more accurate if they allow data about their body measurements and movements to be stored in the system.[10] Given that Fujitsu plans to further roll out this system at the Tokyo Olympics and beyond, gymnasts

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[1] https://www.nytimes.com/2019/10/10/sports/olympics/gymnastics-robot-judges.html
[2] https://screenshot-media.com/technology/ai/robots-judge-gymnastics/
[3] https://www.nytimes.com/2019/10/10/sports/olympics/gymnastics-robot-judges.html
[4] Id.
[5] https://www.theguardian.com/sport/blog/2017/nov/04/ai-judges-gymnastics-olympics
[6] https://www.nytimes.com/2019/10/10/sports/olympics/gymnastics-robot-judges.html
[7] Id.
[8] Id.
[9] Id.
[10] https://syncedreview.com/2019/01/26/meet-fujitsus-ai-gymnastics-judges/

who do not want to participate in the body dimension measurement procedure could be at a significant disadvantage.[11]

Furthermore, Futjitsu has had preliminary talks about eventually collecting the gymnasts' body and movement data and including the data in training materials to be sold to the public.[12] If Futjitsu decides to go through with this proposal, Futjitsu may have to navigate various data protection laws, especially because the gymnasts come from a variety of countries. For example, Fujitsu may have to abide by the European Union's General Data Protection Regulation (GDPR) because this law applies to any organization who collects data related to people in the European Union and there are numerous gymnasts in the European Union. One of the requirements of the GDPR is that organizations must obtain "freely given, specific, informed and unambiguous" consent from participants before processing their information.[13] Because of the scoring benefits, many gymnasts may feel pressured to consent to providing their body and movement information to Futjitsu, and it is uncertain if this will affect their ability to consent. However, regardless of whatever legal obstacles may lie ahead, it seems that this artificial intelligence system will forever change gymnastics judging.

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At the 2019 World Artistic Gymnastics Championships, artificial intelligence systems used the gymnasts' body measurements and movement information to help the human judges score the competition. This new development raises questions about data protection, especially as some look to expand the use of the gymnasts' information.

[11] Id.
[12] https://www.nytimes.com/2019/10/10/sports/olympics/gymnastics-robot-judges.html
[13] https://gdpr.eu/what-is-gdpr/