CHIBA - A fencing bout can be an exhilarating whirr of weapons. But therein lies the problem. Even fencing devotees sometimes struggle to follow the path of the blade, let alone newbies to the sport. But a technology that has been some years in development appeared on the big screens at the Makuhari Messe Hall, making its Olympic Games debut in Japan.

Replays track the path of each fencer's weapon, highlighting not only the touch, but the weapon's entire trajectory.

"It shows how the point was won, the actions, the tactics, the priorities, and the movement of the sword, something our eyes cannot catch," said Maria Ntanou of the International Fencing Federation.

"Even the athlete cannot see what he's doing, but he feels it."

The replays resemble the path of a sparkler against a night sky, or indeed a Star Wars light sabre.

The technology is at the core of an initiative called Fencing Visualized, the brainchild of Yuki Ota, silver medallist at the Olympic Games Beijing 2008 and London 2012 and former president of the Japanese Fencing Federation.

The initiative began in 2013, when Ota teamed up with Rhizomatics and Dentsu Lab Tokyo. It uses augmented-reality technology and a deep-learning algorithm. It is now able to track blades without any technology being attached to the weapon.

The system was first trialled in exhibition bouts at the 71st All Japan Fencing Championships in 2018, before being introduced to competition in the same tournament in 2019.

The striking visuals were also included in a video presentation as part of Japan's bid to host the 2020 Games.

Rotation of the image allows viewers to appreciate the fencers' movements in 3D, something which isn't always evident even to live spectators.

"The next step is to present that during television coverage and on replays so the audience can understand how the fencer won the point," said Ntanou.

"If we can apply this on TV I think it will make a big difference to the sport. It will make it look like a computer game."

OIS Alison Ratcliffe