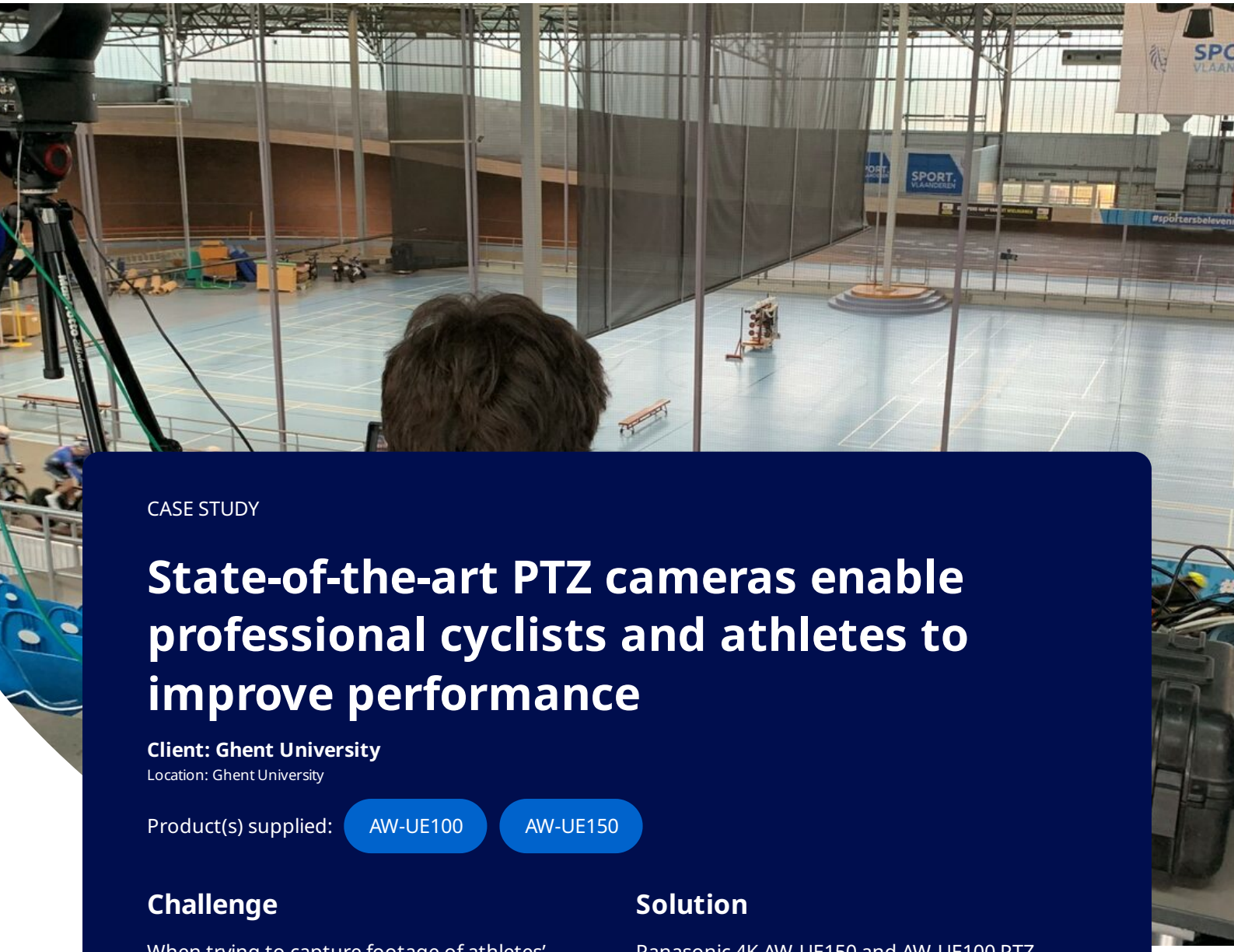
Panasonic CONNECT



CASE STUDY

State-of-the-art PTZ cameras enable professional cyclists and athletes to improve performance

Client: Ghent University
Location: Ghent University

Product(s) supplied: AW-UE100 AW-UE150

Challenge

When trying to capture footage of athletes' performances for analysis and training, coaches often lack robust cameras and the additional manpower and tools to create high-quality videos. However, this is not the case with PTZ cameras, quality high-speed performance footage can be easily captured through automated processes.

Solution

Panasonic 4K AW-UE150 and AW-UE100 PTZ cameras were chosen due to their adaptability and high level of control. For example, when being rotated horizontally for pan angles and vertically for tilt angles to observe areas around their position. Additionally, the size of the objects in the video frame can be controlled by adjusting the focal distance and zoom.

""Track cycling coaches tend to focus on what their athletes are doing 'in the moment'. They often lack the time to capture videos of performances during training or at competitions, which would enable the athletes to learn and improve. Using Panasonic PTZ cameras, we were able to automate framing, and timing loops of track cyclists, while limiting the amount of work involved for the coaches and any technical staff.""

Postdoctoral researcher, Maarten Slembrouck- IDLab, Ghent University-imec

Reviewing Research

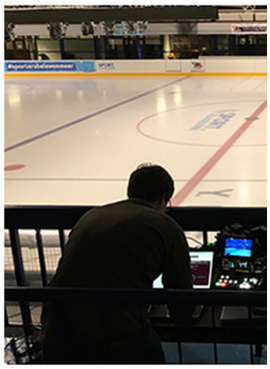
Video replay and feedback is now mainstream in most sports. Video footage helps coaches, referees, and athletes discuss the technical performance and the tactical decisions made during training sessions and competitions. However, capturing good quality video often requires additional technical manpower, which isn't always available, especially for training sessions. Furthermore, the quality of the video is dependent on the concentration and skill of the operator; in high-speed sports it can be extremely difficult to accurately capture useful performance footage.

Dedicated Research in Sport Science

The team at the IDLab at Ghent University-imec in Belgium, have been working on various studies on ways to improve sport performance in cycling, short track speed skating and athletics track events. In this study, the university wanted to focus on how video capture could be used to enhance performance over multiple laps at different speeds.

Professor Dr. Steven Verstockt heads up the research team and lab. One of his postdoctoral researchers Maarten Slembrouck felt it was possible to automate the task of video capture by using state-of-the-art Panasonic PTZ cameras, the AW-UE150 and AW-UE100. These cameras can be controlled in such a way that they can be rotated horizontally for pan angles and vertically for tilt angles to observe a particular area around their position. Moreover, the size of the objects in the video frame can also be controlled by adjusting the focal distance and zoom.
Additionally, Panasonic has a dedicated protocol, so the researchers could easily switch between the different types of Panasonic cameras.

The AW-UE100 is an integrated pan, tilt and zoom camera that supports a wide variety of IP transmission protocols. Its newly designed direct drive motor means that it offers a very smooth pan and tilt movement, as well as installation flexibility, low noise and high-resolution image capture, making it absolutely superb for sports events. Likewise, the AW-UE150 is one of the newest additions to Panasonic's professional PTZ camera lineup and supports very high-quality video production and is particularly suited for stadiums. Its smooth handling, high magnification zoom and wide shooting angles make it a perfect accompaniment to the AW-UE100 and well-suited to a sports environment.



Speed command, zoom and wired connection

Maarten Slembrouck, comments: "I have in the past used other experimental prototype cameras, but the main drawbacks were the limited zoom capabilities, and the wireless controller was inferior to the Panasonic cameras. In fact, I could only control it with very specific commands. We found that Panasonic's PTZ cameras had many advantages over other cameras we trialled, such as speed commands, a wide range of zoom capabilities and a highly reliable wired connection. Timing is absolutely crucial as you don't want to miss a vital frame because of poor connectivity."

Another commonly available technology in track cycling is the use of timing loops. The rider's bike carries a transponder that crosses various loops around the track. Each of these loops requires a dedicated decoder and is connected over ethernet with a central computer that processes all incoming data, including rider identification and time, all in real-time. Combining the timing loops with the PTZ cameras would enable the team to capture video footage of the riders automatically, without the need for a video operator.

Overcoming practical challenges

Although the idea of controlling a PTZ camera by using timing loops was clear to the research team, there were several practical challenges they needed to overcome. These included determining the best location of the camera on the track, ensuring the video capture was as smooth as possible and avoiding any vibration, the latency of the timing decoders, and predicting the speed of the athletes.

The PTZ cameras enabled the research team to automatically track riders on the cycling track using transponder times from multiple timing loops in real-time. The research team was able to predict the next sector's time and controlled the camera using speed commands, enabling smooth video capture. By utilising this information, they were able to ensure that the cyclist would be in the centre of the frame every time.

Maarten Slembrouck comments: "Track cycling coaches tend to focus on what their athletes are doing 'in the moment'. They often lack the time to capture videos of their performances during practice or at competitions, which would enable the athletes to learn and improve. Using Panasonic PTZ cameras, we were able to automate framing, and timing loops of track cyclists, while limiting the amount of work involved for the coaches and any technical staff."

Looking to the future

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