

University of Glasgow and AWTG Collaborate on 5G and Robotic Applications Development

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The University of Glasgow are international leaders in research and development on wireless communications systems and their applications. AWTG Ltd. are pioneers in the design, development and deployment of mobile networks and their applications. AWTG have created a large number of 5G applications in the recent past.

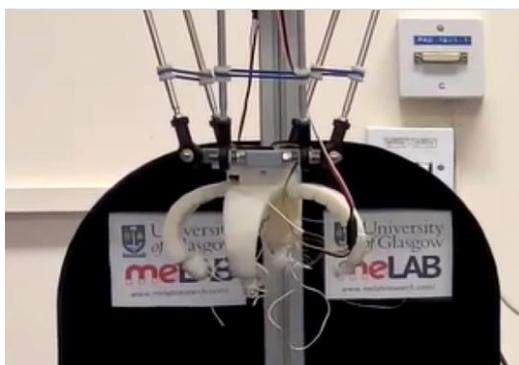


Motion capture sensor

AWTG are delighted to be working with the University of Glasgow on 5G development and design, supported by the Scotland 5G Centre on 5G development and design, and a specific project related to the University of Glasgow’s world-leading development and prototyping of remote robotic control solutions. This is within the scope of an EPSRC Impact Acceleration Account (IAA), aiming to maximise industrial impact of these ground-breaking technologies developed—with AWTG’s inputs—within the University of Glasgow.

5G offers pioneering capabilities opening up whole new markets and classes of applications. One key such class of applications is around the ability to remotely manipulate physical objects in real-time using remote robotic equipment paired with local human-machine interfaces. Such applications with a might require a very low delay between sending a motion instruction to the remote robotic equipment and receiving back information on its effects, e.g., through force-feedback. Achieving such a low delay requirement—potentially as low as 1 ms in some cases, is challenging. Even considering only the propagation delay in sending a signal, the maximum propagation distance (separation between the controller and remote robotic equipment) in optic fibres might be only around 200 km to achieve 1 ms delay, or 100 km if that delay limit is based on the round-trip.

The University of Glasgow’s pioneering work on the prediction of the remote environment allows the delay limit for such remote robotic control applications to be relaxed significantly—hence distance over which they can be run to be significantly increased. This vastly extends the range of scenarios in which such applications can apply. AWTG’s focus on collaborative application development and prototyping in this work positions the company in yet another area of importance—further leveraging the new applications possible in 5G.



“Delta” robotic arm

AWTG appreciates the excellence and pioneering insights of collaborators leading in this area at the University of Glasgow: Dr. Guodong Zhao, Prof. Muhammad Imran, Dr. Yusuf Sambo, and Dr. Hadi Heidari.

Dr. Guodong Zhao, University of Glasgow, comments: “The exceptional expertise in 5G networks and applications of AWTG as well as its prototyping, commercial and marketing know-how are contributing greatly to the success of the project”.

Dr. Oliver Holland, AWTG Ltd., comments: “University of Glasgow are renowned worldwide for their work on 5G innovation, use cases and applications, including for robotic control and healthcare among other topics. Such work with the University of Glasgow helps to extend and future-proof the AWTG services and applications portfolio in highly interesting ways.”

Prof. Muhammad Imran, University of Glasgow, comments: “This project is one of the several use case demonstrations we are working on to show the end-users as well as developers the potential of the future technologies and the vertical markets that will benefit from 5G revolution”.



Real-time wireless control testbed with motion capture and robotic arm