A new use for touchless technology in the operating theatre

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Credit: Microsoft

Pioneering work using touchless technology for vascular surgery is now being extended to neurosurgery.

Dr Mark Rouncefield and Dr. Gerardo Gonzalez from the School of Computing and Communications at Lancaster University were part of a collaborative team from Microsoft Research, Guy's Hospital, St Thomas'

NHS Foundation Trust, and King's College London to pilot the technology in the operating theatre.

Following the successful pilot of the technology in vascular surgery procedures, the team from Lancaster and Microsoft have now partnered with neurosurgeons at Addenbrookes NHS Foundation Trust and Cambridge University to apply the technology to the manipulation of 3D volumetric models of the brain for neurosurgery. The new system is currently being piloted in the operating theatres.

Dr Rouncefield said: "This project on 'Touchless Interaction' has successfully combined the skills and knowledge of social and computer scientists with the professional experience of surgeons, to design and develop an application that is already proving of real benefit in the operating theatre"

The pioneering work explores the use of touchless interaction within surgical settings, enabling surgeons to view, control and manipulate medical images without contact.

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Surgeons operate in a challenging environment where they are required to maintain sterility at all times. Re-scrubbing is time consuming and therefore surgeons are frequently compelled to instruct others to manipulate visual-aid equipment for them; an often impractical and imprecise method.

The new gesture-based systems utilize Kinect for Windows hardware and the Kinect for Windows Software Development Kit to allow the surgery teams to maintain a sterile environment, whilst being able to view and manipulate medical images through a combination of gesture and voice control.

Prof. Kenton O'Hara from Microsoft Research said "Adapting the technology for neurosurgery has allowed us to understand how the

system works across different surgical domains. As well as refining the gesture set, the new system incorporates enhanced voice control that enables the surgeon to control the system using only voice leaving both hands free to work with surgical instruments."

The touchless interaction software was developed by Gerardo Gonzalez, a post-doctoral researcher at Microsoft Research from Lancaster University.

Provided by Lancaster University