

Surgical skills with the click of a button

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To the untrained eye, the spreadsheet sitting on Luke Humphris' desk appears to be a mishmash of meaningless numbers.

But the information at hand is actually a powerful teaching tool that provides comprehensive, up-to-the-second data on the accuracy, skill and precision of aspiring surgeons.

Mr. Humphris, an honours student in Software Engineering at Flinders University, has developed a new computer program that assesses the performance of surgical students based on three key elements; the proximity to a target, the ability to trace a steady line using the right amount of force and the ability to detect a hard mass in a seemingly even surface.

Unlike other, more realistic virtual simulators that are currently being used in the medical field, Mr. Humphris' haptic device (pictured left) is comprised of basic tasks that mimic surgical movements, yet the

difference is that the software can actually record the test results on a [spreadsheet](#) for analyzing.

“One of the tests looks like a big, skin-coloured square on a computer screen but it actually contains a harder area within it,” Mr. Humphris said.

“The idea is for the student to find that hard spot in the square, similar to a surgeon looking for hard mass in the body,” he said.

“Another experiment looks at a person’s ability to follow lines so it works out where the closest point from the line to the tip of the tool is and records that data approximately every 15 milliseconds.

“Not only does it record the average distance from the line but it can determine if you are better at tracing a particular type of pattern or direction.”

Mr. Humphris said he eventually hoped to add his assessment program to existing “virtual surgery” simulation devices to create an all-in-one training and assessment tool.

“Haptic virtual simulation is relatively unused in surgery at the moment and while there are projects investigating how it can be used, it’s mostly for practice rather than assessment,” he said.

“The other key thing is the objectiveness of the testing – if 10 surgical students did this testing with a teacher their marks would be relative to who is assessing them.”

The project is among about 50 student works which will be on display at the Computer Science, Engineering and Mathematics Expo on Tuesday, November 8.

To be held in the University's Information, Science and Technology Building, the expo will showcase projects that third year, honours and masters students have been working on throughout the year.

For more information about the expo click [here](#).

Provided by Flinders University

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