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Doctor of Philosophy

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Image created in the BLINC laboratory, University of Alberta

Robo-Surgeon!

Semi-Finalist

Advances in robotic medical technologies have enabled an emerging generation of upper limb prostheses capable of moving with the same complexity and fluidity as a human arm. Yet even the most advanced commercially-available systems are unable to communicate sensations of touch and movement to the user; a crucially important aspect of healthy limb control. At the BLINC Lab in the University of Alberta, a sensorized, 3D printed prosthetic hand and arm has been developed by a team of engineers, computer scientists and clinicians. This system can detect touch, grasping forces, and movement, as well as capture visual data through a camera integrated in the palm. This sensory data can be displayed to the prosthetic user through a number of devices developed to integrate with this hand and arm. Additionally it can facilitate artificial intelligence through machine learning algorithms. The use of 3D printing technologies and off-the-shelf components makes this system affordable and incredibly accessible as continued development toward open source distribution is currently under way.