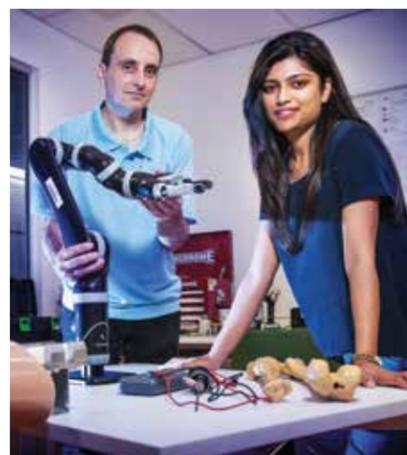




# Robotic vision creates

# REAL medical solutions

When a surgeon, a roboticist and a biologist collaborate on a shared passion, you can be sure they will create innovative ideas.



Pictured above from left, Professor Jonathan Roberts, Professor Ross Crawford and Dr Anjali Jaiprakash

By Kate Haggman

Medical robots today are large, expensive and out of the reach of most health professionals in the developing world.

Orthopaedic surgeon Professor Ross Crawford, robotics expert Professor Jonathan Roberts and biologist Dr Anjali Jaiprakash are tackling key medical issues with affordable, simple robotic devices.

They envision a near future in which cost-effective robotic 'assistive tools' take the pressure off busy health professionals.

The researchers are starting with knees but believe their vision can be

easily adapted to other minimally invasive surgeries.

'Knee arthroscopies are both physically and mentally taxing on the surgeon, who spends years just learning how to carefully manoeuvre instruments into the small, confined spaces within the knee joint,' Professor Crawford said.

'We're developing an affordable robot that will use the latest robotic vision technology to perform those tiny, precision movements under a surgeon's supervision. In fact, one surgeon could oversee several robotic arthroscopies at once.'

QUT's health and medical robotics team, part of the new Australian Centre for Robotic Vision (ACRV), believes the robot would slash patient waiting lists, simplify training for new surgeons and prolong their labour-intensive careers.

The project is just one of several underway as part of a new collaborative research focus for QUT's Institute of Health and Biomedical Innovation, Institute for Future Environments, Science and Engineering Faculty, Medical Engineering Research Facility and the ACRV.

The team is also developing a low-cost microscope system with predictive learning abilities that can detect malaria in blood samples.

The microscope attaches to a smart phone and compares the stained blood sample to a comprehensive database of images of infected blood samples.

***"One surgeon could oversee several robotic arthroscopies at once."***

'This technology will be life-changing for the 3.4 billion people in the world at risk of contracting malaria,' ACRV's Dr Jaiprakash said.

'Rather than healthcare workers sending blood samples to laboratories to be analysed—a lengthy process—this in-field device will be able to tell them on the spot if the parasite is present in the blood, and at what density, so that treatment can begin immediately.

'The system requires minimal training and no internet connection—the kits can be shipped to regions suffering outbreaks quickly and cheaply.'

Roboticist Professor Jonathan Roberts said the technologies being developed at QUT could be adapted for other diseases and procedures.

'We're researching a low-cost device to diagnose diabetic retinopathy and a 3-D scanning platform we believe will help surgeons and their pathology colleagues remove bone tumours more accurately,' Professor Roberts said.

'The field of robotics is evolving rapidly and we are excited by the prospect of applying QUT's world-leading robotic vision research to solutions that will improve the lives of people across the world while reducing the cost of healthcare.'