

Project Title	Making a true 3D camera
Supervisor	Dr Christopher Rowlands
Theme(s)	Molecular and Cellular Bioengineering Medical Devices Neurotechnology and Robotics
Project Type	Lab based
Project Description	<p>When it comes to microscopes, there are no shortage of approaches to imaging a 3D sample: multiphoton microscopy, light-sheet microscopy, confocal and so on. What is notable about these techniques however is that they work by imaging a volume one plane at a time, and thus aren't really imaging in 'true' 3D.</p> <p>This project will change all that, as the student will be working on a system that can really image a volume (animal heart, brain, cancer organoid, tissue sample etc.) in 3D. The system itself is based on a design called a Framing Camera. This uses a mirror to reflect light to a number of cameras, each of which can see a different plane in the sample.</p> <p>The student in this project will be constructing the prototype of this system, which will involve assembling the cameras and the optical system, programming the mirrors, and ultimately building the world's first true 3D microscope.</p> <p>The ideal student for this project will have a good background in mechanical, electronic or software engineering, and a keen interest in picking up new skills. He or she will be ambitious and self-motivated, and a quick learner. There is no specific requirement on skills as these can all be taught.</p>