**Engineering Simulation and Modelling Group part-funded studentship: project 2**

**Development and demonstration of a new series of robots which use 'active touch' for damage detection and health monitoring of composite structures**

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Low-velocity impact induced damage is often hard to spot from the impacted side in a routine visual inspection, but it has a significant effect on the mechanical performance of laminates, especially the compressive strength which may decrease by up to 60% compared with an undamaged laminate.

Supervisors of this proposal have successfully utilised a biomimetic robot as a novel and robust device that is capable of indicating the impact induced damage status in impacted composites. The key sensory system in this biomimetic robot is the mystacial vibrissae (facial whiskers provides a rich tactile description of local surface shapes and textures).

This project will develop a mobile whisker robot scanner which can be used to detect defects in composite materials and components. The principal objectives will be:

(a) Indicating the potential of whisker technology for detection different damage mechanisms,

(b) The development of an active whisking array for use in mobile robotics and

(c) Verification that an active whisking array can be usefully employed for sensing the damage with a reasonable speed.

**For an informal discussion about this project**, please email [Mahdi.Damghani@uwe.ac.uk](mailto:Mahdi.Damghani@uwe.ac.uk).