

# New kit pumps up 3-D feedback

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A brand new computer system which provides 3-D feedback on weightlifting performance will now be taken to another level by a Lancaster University scientist.

Eduardo Velloso, a second year PhD student at the University's School of Computing and Communications, featured recently in the *New Scientist* magazine for his innovative work, now plans to link computers with emotions.

Eduardo, from [Rio de Janeiro](#), presented his innovative [weightlifting feedback system](#) to the Augmented Human Conference in Stuttgart, an

international conference which highlights new scientific technologies geared at increasing human capabilities.

The computerised kit, the first of its kind, provides intricate information on a weightlifter's performance ensuring, for the first time, that advice on technique is instantly and accurately monitored and relayed in real-time.

The sophisticated system uses a Microsoft Kinect depth camera to monitor 3-D movement and an LCD display to indicate if the weightlifter is undertaking the moves in the right way, position and speed. Tests showed a significant improvement in weightlifting performance.

Eduardo came to Lancaster University, his number one choice for computing studies, as a research associate in February 2011 and started his PhD that September. He worked closely throughout the project with his PhD supervisor Professor Hans Gellersen and a former Lancaster University research associate, Andreas Bulling.

"For most of my first year I worked on the weightlifting project to analyse movement and provide sophisticated feedback," said Eduardo. "We picked weightlifting because it is an activity with specific movement."

Now Eduardo, a [computer engineering](#) graduate of the Pontifical Catholic University of Rio de Janeiro (PUC Rio), plans to tackle another breakthrough pioneering project with the help of a Faculty scholarship.

"I have moved on from weightlifting but will still be analysing movement," explained Eduardo, who came to Lancaster University on the recommendation of Alessandro Garcia, a Professor at PUC Rio, who was a lecturer at Lancaster University previously.

"By tracking a person's movement I want to understand the emotions the person is experiencing. This is in its very early stages. My goal is to deduce affective states of mind from body language. This involves psychological behavioural research and affective computing. It's a very interesting topic. Computers understanding emotions will be amazing.

"Previous work in emotion recognition has focused on facial and voice recognition. We are now trying to do this by looking at users' bodily expressions. We could use this method in systems to help users in improving their body language for specific situations such as a job interviews or public speaking."

Provided by Lancaster University

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