

Reading emotions, computer style

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PhD student Tom Christy and Prof Lucy Kuncheva try out the prototype device.

Having a computer that can read our emotions could lead to all sorts of new applications, including computer games where the player has to control their emotions while playing. Thomas Christy, a Computer Science PhD student at Bangor University is hoping to bring this reality a little nearer by developing a system that will enable computers to read and interpret our emotions and moods in real time.

Tom's work focuses on 'hands-on' pattern recognition and machine learning. His supervisor Professor Lucy Kuncheva at the University's School of Computer Science is a world expert in pattern recognition and classification, specifically in classifier ensembles. A classifier ensemble is a group of programmes that independently analyse data and decide to which label or group the data belongs. The final decision is reached by a 'majority' or consensus, and is often more accurate than individual classifier decisions.

The plan is to combine brain wave information collected from a single electrode that sits on the forehead as part of a 'headset', a skin conductance response (which will detect tiny changes in perspiration as first indicators of stress) and a pulse signal, reflecting the wearer's heart rate. This information will form the data fed into a classifier

ensemble set to determine which emotion a person is experiencing.

"I am particularly interested in developing a real-time 'mood sensing' device. It will combine already existing biometric detection devices into a lightweight portable system that will be able to perceive and indicate a person's mood and level of stress and anxiety," said Tom.

Tom is aiming to pioneer classification software techniques that will allow players' emotions to be identified within the gaming environment. This will open up new and exciting markets for the gaming industry. New games can be created; where players must control their feelings in order to advance within their virtual environment.

"This area of [emotional](#) study is fast becoming an important part of research within Computer Science and is known as Affective Computing," explained Prof. Lucy Kuncheva.

There are many other possible applications for this type of technology, for example marketing to determine customer preferences and brand effectiveness, monitoring anxiety levels of prospective soldiers during military training, providing instant neuro-feedback to combat addictive behaviours; the list is seemingly endless.

Tom is working in close collaboration with the Bangor University's Schools of Electronic Engineering and Psychology and has had talks with Massachusetts Institute of Technology (MIT) in Boston, USA in pursuit of his research. He is looking for industrial collaborators and innovators who would be interested in this area.

Tom comes from Upper Llandwrog in Gwynedd. He gained a first class degree in [Computer Science](#) at Bangor University in 2009.

Provided by Bangor University

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