

FUGA



Although video and computer game players certainly appreciate the fun, developers and scientists cannot currently measure the games experience as relatively little research has ever been carried out in this area.

FUGA is focusing on creating novel measurement techniques to quantify the complex and dynamic experience of enjoyment derived from such games.

It will also develop an emotionally adaptive gaming prototype.

The results will improve European products and support those concerned with the potentially adverse effects of gaming.

Computer and video gaming is now one of the most popular forms of mass entertainment worldwide. Digital games are also playing a growing role in therapy, education and training. But what makes a game good and why? And just how do you measure the effect of such a dynamic and continuous interaction? The FUGA project will establish innovative comprehensive measurement methods to help designers and media psychologists answer these questions and to improve computer and video gaming.

Digital gaming attracts millions of players worldwide and is forecast to grow substantially, making it a major new area of information and communications technology. Yet, despite the intense enjoyment derived by most gamers, surprisingly little is known scientifically about the fun involved. Despite enormous resources invested in creating new computer and video games, developers make little use of psychological research to create better and more appealing products tailored to the enjoyment of individual users.

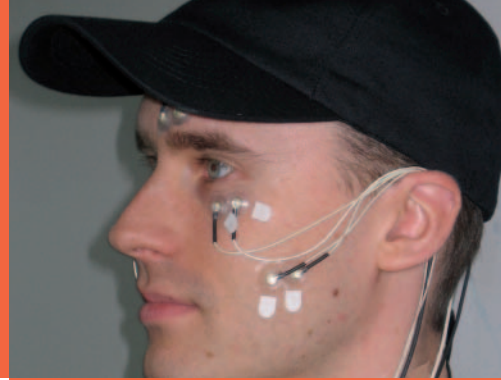
Multidimensional environment

The computer games experience is a multi-dimensional phenomenon that involves both emotions and cognitions. FUGA will combine expertise in neuroscience, psychology, physiology, communications, computer science and vision research that will improve existing approaches and create novel methods to assess the different emotional and thought processes involved in the highly dynamic games experience.

Innovative psychophysiological techniques linking the way psychological activities produce physiological responses will be used to measure the experience. Recordings will be made of reactions using facial electromyography, electroencephalography, electrocardiography, electrodermal activity and respiration. And FUGA will employ functional magnetic resonance imaging (fMRI), eye-movement recording, the online implicit association test (IAT) and tracking of behavioural indicators for emotion and motivation.



“Interactive games are a major business generating high quality jobs in development and marketing.”



AT A GLANCE

Official Title

The Fun of Gaming: Measuring the Human Experience of Media Enjoyment

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€ 2M

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*City of Bruma in Elder Scrolls IV: Oblivion.
© Bethesda Softworks*

EMG electrodes in place.

FUGA's objectives include establishing the validity and reliability of such techniques and seeing how they can predict game playing in the long term. The project will also develop a prototype of an emotionally adaptive game that changes its behaviour dynamically in real-time based on psychophysiological measurements that index the players' emotions.

Use of psychophysiological recordings offers several advantages, not least the ability to perform high resolution measurements continuously and to provide information on emotional and attention responses. Such an approach has been used in media studies to examine responses to television, radio and textual messages but little use has been made of this technique in examining the dynamic interaction involved in games play.

Mobile psychophysiological recording will form an important element as many games are portable and the gaming environment plays a role in the experience. New algorithms will be developed to extract relevant parameters from the measurements being made to determine which specific elements of a game result in a particular response.

Emotional enjoyment will be determined using a combination of physiological recordings, facial expression observation and fMRI with high resolution real-time content analyses. A major challenge will lie in the application of fMRI in a real game, requiring innovations in imaging procedures.

Another innovation will be the use of an approach based on the IAT that makes possible the assessment of thought processes in computer games play. IAT uses response latencies to identify and sort implicit associations in the mind, particularly those

associated with self-esteem – for example, 'I'm winning/not winning' – and the player's role in the game. The aim is the development of new methodology providing reliable, valid and time-sensitive data on game users' implicit thought processes.

Boost to European gaming industry

Interactive games are a major business, generating high quality jobs in development and marketing. Much of this business is currently concentrated in Japan and the United States. FUGA will significantly advance the methodology of European games research, helping guide design choices when pre-testing products. It will have a practical effect on games design, enabling designers to maximise pleasure and attention. And it will help in the development of new types of games, overcoming the need for designers simply to copy successful existing formats.

The results of FUGA will help Europe boost its gaming industry, creating jobs and gaining global impact in the entertainment sector. FUGA will also help improve the design of non-leisure software such as games for therapeutic and educational purposes, allowing the development of games that engage students in knowledge discovery and skill acquisitions without distracting from educational content.

The work involved in FUGA will also be applicable to tackling the effects of violent video games by providing a valid method to examine emotional and thought processes while they are being played. In addition, FUGA could well help in improving the understanding of how addiction to gaming arises and how it can be prevented or treated.