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Conveying Affectiveness in Leading-edge Living Adaptive Systems

The CALLAS Consortium:

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British Broadcasting Corporation - U.K.

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*C*onveying

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Conveying **A**ffectiveness in **L**eading-edge **L**iving **A**daptive **S**ystems

Developing Affective Interface Technology for New Media and Digital Arts and Entertainment.

Objective:

People naturally communicate combining gestures, movements, speech, and expressions. Emotions and affectiveness play a fundamental role in enriching the naturalness of human-human and human-machine interaction and communication. Affective Interfaces have been a major development of human-computer interaction: they give the opportunity to computers to extend their processing ability to the domain of human emotions and feelings. One of the most promising application areas for affective interfaces is constituted by digital entertainment, where media content meets user experience. CALLAS aims at developing affective interfaces which will be central to new media experience such as *Digital Theatre, Interactive TV, Augmented Reality Art*, and *Interactive public performances*.

An Interactive Approach:

In recent years, Digital Media and Entertainment systems have developed largely in terms of both technical sophistication and richness of digital content. On the other hand, the recent progress in emerging technologies such as: ubiquitous computing, augmented and virtual reality, human-computer interaction, and context and location awareness are paving the way for a profound paradigm shift towards embracing users' natural behaviour as the centre of human-computer interaction. The CALLAS project will develop specific technologies for the multimodal processing of the emotional experience associated to Arts and Entertainment. To enhance the user experience in Arts and Entertainment, CALLAS aims to handle new and innovative categories of emotions, as well as improve the performance for existing modalities at the input level. This technology will impact a variety of extensions in New Media and business applications, including: Augmented Reality for Art, Entertainment, and Digital Theatre, Interactive installations for public spaces, and next-generation Interactive TV. Finally, CALLAS will promote Technology Transfer, in particular towards SMEs (Small and Medium Enterprises) in the new media sector. Whether these SMEs are involved in Digital Arts and Entertainment, or are innovative technology spin offs, they will benefit from the significant reduction of the cost of developing affective multimodal interfaces, and creating an effective sustainability model with new revenue streams based on the delivery of innovative services from CALLAS technologies.

Methodology:

CALLAS will develop multimodal affective interfaces for Art and Entertainment applications suitable to:

● Advance the state of the art in affective computing by developing new emotional models, which will address user emotions and feelings in the context of interactive application with a strong aesthetic component
● Develop new techniques for the emotional processing of various input modalities (speech, language, non verbal behaviour) to capture these new emotional categories, as well as more traditional ones, in the context of real time applications
● Promote the development of re-usable software components dedicated to the processing of individual modalities, which would serve as building blocks for a wide range of affective multimodal interfaces

Towards Real World Applications:

CALLAS will make available integrated prototypes demonstrating the use of multimodal affective interfaces in realistic applications, addressing both short-term and long-term perspectives. These will range from enhancing Digital Theatre by detecting emotional states of the actors on the stage in order to create on-the-fly virtual scenographies, by capturing reactions of an entire audience, to the development of futuristic art forms such as Augmented Reality Art. Additional demonstrators will contribute to established research areas such as Interactive TV, by introducing either affective interactive storytelling or pervasive computing supported by mobile affective devices which enhance spectators' experiences in the context of digital arts or public performance.

Visit the CALLAS website to learn how to get involved!

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