CyberEmotions: Decoding the Digital Pulse of Humanity

Authored by

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CyberEmotions (Collective Emotions in Cyberspace) is a large-scale integrating project funded by the European Commission under the Seventh Framework Programme (FP7) in FET ICT domain theme 3: 'Science of complex systems for socially intelligent ICT'. It started in February 2009 for a period of four years, and gathers approximately 40 scientists from Austria, Germany, Poland, Slovenia, Switzerland, and United Kingdom. Its main objective concerns understanding the role of collective emotions in creating, forming and breaking-up eCommunities.

So far, research performed within the project has helped uncovering some of the mechanisms driving eCommunities, such as negative emotions. It has led to the creation of several sentiment analysis computer programs, such as SentiStrength. Additionally, data gathered from online communities -such as the BBC message boards- have been made available to any interested researcher.

Objectives

To understand the role of collective emotions in creating, forming and breaking-up ICT mediated communities as a spontaneous emergent behaviour occurring in complex techno-social networks.
To understand the relationship between emotions of individuals as revealed by subjective experience, behaviour, physiological responses, and expressions with online emotional behaviours of ICT mediated dyads and groups in an integrative multi-level approach.
To create decentralized adaptive tools which allow the amplification of positive or the suppression of negative collective emotions in e-societies and take into account the heterogeneity of interacting humans.
To prepare the theoretical background for the development of the next generation emotionally-intelligent ICT services using models of self-organized active agents and sociophysics methods.

Consortium

The CyberEmotions consortium is composed of approximately 40 scientists in the area of physics, engineering, computing, artificial intelligence, virtual reality, and psychology. The additional business partner, Gemius SA, is an online research agency dealing with Internet market research.

Centre of Excellence for Complex Systems Research, Warsaw University of Technology (Poland)
Virtual Reality Lab, École Polytechnique Fédérale de Lausanne (Switzerland)
Statistical Cybermetrics Research Group, University of Wolverhampton (United Kingdom)
Austrian Research Institute for Artificial Intelligence (Austria)
Chair of Systems Design, ETH Zurich (Switzerland)
Department of Theoretical Physics, Jožef Stefan Institute (Slovenia)
Emotion, Cognition, Social Context, Jacobs University Bremen (Germany)
IKM Research Group, Berlin Institute of Technology (Germany)

Gemius SA (Poland)

Project Management Committee

Each institution is represented on the Project Management Committee by a work package leader:

Prof. Dr. Janusz Holyst - Warsaw University of Technology, Poland (CyberEmotions Coordinator)
Prof. Dr. Daniel Thalmann - École Polytechnique Fédérale de Lausanne, Switzerland
Prof. Dr. Michael Thelwall - University of Wolverhampton, United Kingdom
Dr. Marcin Skowron - Austrian Research Institute for Artificial Intelligence, Austria
Prof. Dr. Frank Schweitzer - ETH Zurich, Switzerland
Prof. Dr. Bosiljka Tadic - Jožef Stefan Institute, Slovenia
Prof. Dr. Arvid Kappas - Jacobs University Bremen, Germany
Dr. Matthias Trier, Asst. Prof. - University of Amsterdam, The Netherlands & TU Berlin, Germany
Anna Borowiec - Gemius SA, Poland

Advisory Board

Three internationally renowned scientists form CyberEmotions' Advisory Board:

Prof. Dr. Roddy Cowie - Professor of Psychology at Queen's University, Northern Ireland
Prof. Dr. Jeff Johnson - Professor of Complexity Science and Design at The Open University, United Kingdom
Prof. Dr. Peter Richmond - Trinity College Dublin, Ireland

Research

During the first two years of the project, CyberEmotions led to the discovery of underlying emotional processes in eCommunities. For instance, it was shown that important events (such as the Oscars) typically generate a majority of negatively valenced tweets, or that female users of MySpace send and receive proportionately more positive comments than males. The project fostered the development of several sentiment mining software programmes capable of retrieving the emotional valence and arousal in text produced by web users. Several physics and network models were developed that help understand the dynamic behind variations in valence and arousal of messages posted in eCommunities. Finally, software was designed that is able to respond in an emotionally-consistent way to messages produced by users varying in emotional content.