Symposium: Monitoring of Social Interactions and Initial Signs of Conflicts in Isolated Groups During Long-Term Missions

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ABSTRACT

There are many missions which should be performed by small groups of people (crews) working in hard and extreme external conditions for a long period of time (space missions, submarines, polar stations and expeditions). Such missions are usually accompanied by a set of negative factors which have a strong influence on the physiological, psychological and sociological state of the crew, determining group performance and, as a consequence, the success of the whole mission. Interpersonal relations withing the group is one the main factors influencing performance of the crew. Inter-crew tension can cause formation of subgroups, disruptions of cohesion, scapegoating, refusal of communication and collaboration leading to a decrease of mission quality or even failure of the mission. Social health of the crew and psychological health of crew members are strongly related with each other being a complex psychosocial phenomenon.

In this respect it is important to have a possibility to monitor psychosocial state of the group during the mission. This approach requires a development of techniques for monitoring of social interactions, non-verbal behavior and initial signs of depression or aggression. Usage of such techniques can help to diagnose, predict and prevent conflicts on their earlier stages. There are different approaches to measure human behavior. Analysis of nonverbal communication is one of the powerful tool for monitoring mental state and relations among the crew-members. Automatic recognition of face expression and voice intonation as well as analysis of body movements are promising techniques for monitoring psychological states of crew members as well as interpersonal relations in the group. Usage of virtual environments as a medium for

interactions between the crew members (for example on-line games) is another promising way to approach the problem of monitoring interpersonal relations in the group. In this approach interactions among the group members is restricted and formalized by the construction and, in this way, it is possible to simplify the data for the analysis as well as to focus on specific aspects of the relations between the group members. With the current fast development of multimedia technologies the gap between the real face-to-face communication and virtual communication decreases. As a consequence the monitoring of physical parameters of real face-to-face communication and usage of virtual environments for interaction between peoples can be considered as techniques approaching the problem of monitoring human-human interaction from different directions with a tendency to merge into one broad filed of research in the future. In this respect a collaboration between researchers working in different filed is desirable.

Additionally to that virtual words were also shown to be effective tools in treatment of psychological disorder (different phobias). In this way, the role playing games, based on the usage of specially designed virtual words, can perform not only passive (monitoring) but also active (prevention and treatment) role with respect to psychological and interpersonal problems. Virtual environments can be enriched by intelligent virtual agents which can assist crew-members in performing complicated tasks which require extensive knowledge and intellectual resources. Maintenance of psychological and psychosocial health can be considered as one of the tasks performed by the virtual agents. Since virtual agents need to solve a variety of complex problems, state of the art techniques should be used for their development (evolutionary game theory, reinforcement learning).

The above mentioned challenges require a collaborative effort from leading researchers from different fields. This symposium is intended to bring together specialist from different disciplines to enable a productive and diverse discussing on the subject. The exchange of experience has a significant importance for further development of the

computer systems for measuring human behavior and monitoring psychological and social health in small groups of people.

Author Keywords

Small groups, conflicts, isolation, interpersonal relations, nonverbal communications, emotional isolation, special confinements, long-term missions, conflicts predictions, space missions.

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