

# INNOVATIVE e-conferencing TOOL

A solution for improving alertness and quality interaction between lecturer and audience in two-way audio-video communication platforms.

## KEY INFORMATION (SOLUTION CATEGORY)

Web-based education, on-line conferencing, distance lecturing and learning, audio-video communication platforms.

## TECHNOLOGY READINESS LEVEL

TRL 2

## IPR STAUS

National patent granted,  
PCT patent pending.

## TYPE OF COOPERATION

technology licensing  
opportunity, sale of  
patent



## OVERVIEW

The virtual environment does not provide the same interaction possibilities as non-virtual environments. Therefore, our solution is addressing the mentioned challenge and is intended for assessing, managing, and improving the quality of on-line interaction with an emphasis on alertness of participants.

The solution is transparent to listeners, students, employees, and participants in general, while providing vital information to the leader, presenter, or lecturer. It can be integrated into popular audio-video communication platforms like Zoom, WebEx, MS Teams etc., or can be implemented as a standalone solution available to other services via an application programming interface.

The solution is based on an agent arranged to receive, track and/or analyze data from the users, where these data are obtained from sensors and deployed digital devices. The data belong to four channels: system-processes based channel (data from deployed computing systems), motor channel (data representing users' locomotion), physiological channel (data about general physiological status of users), and neurological channel (data about neuro-specific state of users).

The agent analyses the received data using advanced techniques (ranging from statistical methods to machine learning/artificial intelligence) provides feed-back to the chairman, leader, or lecturer about the alertness state of the participants. Such feedback enables the lecturer to react regarding the alertness of the audience. This feedback is in the form of graphs, colored bars on his / her device and is presented for a particular participant or a group as a whole.

## DEVELOPED BY

University of Primorska,  
Prof. dr. Borut Likar and  
Prof. dr. Denis Trček

## CONTACT

University of Primorska  
Centre for Development  
and Knowledge Transfer

+ 386 5 66 37 785  
sebastjan.rosa@upr.si

The solution is very useful also in case of dozens or hundreds of participants, because the lecturer cannot observe all of them. The solution also enables obtaining feedback without providing the participants' on-line picture - the camera is used only for analytical purpose.

## TECHNOLOGY FEATURES

This technology can detect various indicators related to participants' alertness. For low level alertness these are frequent looks away from the screen or camera, frequent yawning, longer lasting speaking without microphone use, use of other programs or applications, eye movements in different directions, frequent whole-body movements, changes in physiological and/or neurological parameters, longer absence from the camera. On the other hand, high alertness state is detected by focused looking at the screen or camera, promptly reacting to questions, messages and/or tasks, rarely or never yawn, never or rarely disappearing from the camera.

To meet EU GDPR requirements about privacy, the solution discards acquired data in real time or processes them appropriately, e.g., by anonymizing them or by deploying differential privacy techniques, for subsequent analysis.

## POTENTIAL AREAS OF APPLICATION

This technology can be deployed in various areas, such as (but not limited to)

- Online education and training
- Web conferencing
- Online retail
- Online marketing
- Web based recruitment
- Massive on-line courses
- Online support
- Other forms of on-line communication.

## MARKET POTENTIAL

Increasing number of organizations today are going on-line with many activities, be it commercial enterprises with their business processes of many kinds, or universities and schools with lecturing and teaching, or government bodies with their administrative tasks. Consequently, the popularity and the need for web-based video and audio platforms like Zoom, GoToMeeting, MS Teams and alike is soaring.

However, online courses, conferences and alike lack a direct face-to-face contact and audio-visual communication feedback, so the leader (the presenter or lecturer) cannot be assured how attentive the listeners are. This solution therefore enables such feed-back so that the leader (the lecturer) can adjust his course using various pedagogical/ andragogic motivation approaches e.g., by stating directed questions, using "thumbs-up" communication signs, explaining content in more detail, using interaction and video elements etc.

A brief market analysis indicated high interest of potential users: especially lecturers as well as listeners like students and employees.

## BENEFITS

This solution enables the online event provider (a conference leader, lecturer, teacher, instructor etc.), to assess the level of alertness of the attendees (customers, students, pupils, conference participants, etc.). By having appropriate feed-back the means of online engagement become a viable alternative for face-to-face meetings, thus saving money and time for the organizers as well as attendees, while making them also more suitable for the attendees as they may join the event when this is physically not possible (travel costs, epidemics, other obligations).

The experience shows that only a small portion of on-line events participants have the camera turned on. Therefore, visual feedback is not possible. Besides, in case of dozens or hundreds of participants, the lecturer cannot observe all of them. The solution enables high -quality feedback without providing the participants photo/video - the camera is used only for the analytical purpose while the participants can remain "incognito".

This reduces overhead activities compared to ordinary face-to-face meetings. For all the parties involved it enables them to effectively conduct more meetings (contacts) than in ordinary environments. Also, the wider impact of such solutions should be mentioned, e.g., zero carbon footprint due to less travelling of participants.



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