Intelligent Glasses Designed for Professors

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The proposed Augmented Lecture Feedback System (ALFs) seeks to improve communication between students and professors during large lecture classes like those frequently given at universities.

The way they work is quite intuitive: the professor wears a pair of augmented reality glasses that enable him/her to see symbols above each student; the symbols indicate the person's state while this activity is taking place.

"These symbols are activated by the students via their cell phones and are used to tell the professor that they don't understand the explanation, or that they have understood it, to ask the professor to go more slowly, or to say whether or not they know the answer to the question that the professor has just asked the class," explains one of the researchers from UC3M's Grupo de Sistemas Interactivos (Interactive Systems Group), Telmo Zarraonandia.

This way, the professor knows, simply by looking at the symbol a student has displayed over his/her head, exactly what that student wishes to communicate to him/her. In addition, on the upper part of the glasses, the system shows a diagram with the aggregate of the answers given by the students, which can be particularly useful in large groups.

The main advantage of this device is that students have a new way to communicate that enables them to be in contact with the professor both immediately and privately, and without interrupting the class.

"The channel that we've created will help overcome the problems of timidity or fear of speaking in front of the class that some students have", points out one of the researchers, Ignacio Aedo, a tenured professor in UC3M's Computer Science department.

This way, the professor has a source of immediate information on what the students are grasping from his/her presentation.

"The hope is that this system will make for more effective lecture classes, because receiving greater feedback, continuously, will allow the professor to adapt the class based on the students' actual knowledge and understanding, giving extra examples, varying the rhythm or skipping those parts of the lesson that the students indicate that they already know or remember," concludes Aedo.

Moreover, through the glasses, the system allows the professor to visualize notes or comments that s/he doesn't want to forget to mention at specific moments, and which s/he can introduce in the system prior to the class.

Education of the Future

The architecture of the system is described in a scientific article published in the British Journal of Educational Technology in a special monographic edition dedicated to the education of the future.

The prototype that these researchers have developed is controlled by gestures, captured with a Microsoft Kinect; using these gestures, the professor selects the support slide for an explanation, or activates predetermined questions to which the students respond by displaying a variety of symbols that they select using their cell phones.

The system can identify the students using facial recognition (by previously loading their photographs to a database) or, in larger groups, by using a positioning system based on markers.

In order for the students to be able to select the symbols, they just have to connect their cell phones to the server where the system is installed. The professor, on the other hand, just needs a pair of augmented reality glasses.
"Because of their ability to display information on the user's field of vision, these devices have the potential to change the way in which we carry out many of our daily tasks, as well as offering many interesting possibilities from a research point of view," comments Telmo Zarraonandia.

Currently, the various models of augmented reality glasses are costly and not very ergonomic because they are too heavy and make it difficult for the professor to move, but "it is hoped that in the next few years new models will come onto the market and these will be suitable for use in class, as might be the case with the new Google glasses, which could be adapted to this system," points out Ignacio Aedo.

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