



**Pablo Cesar** is the group leader of the Distributive and Interactive Systems group at Centrum Wiskunde & Informatica (CWI) and Associate Professor at TU Delft. His research focuses on modelling and controlling complex collections of media objects (including real-time media and sensor data) that are distributed in time and space. Originally from Spain, he earned his PhD at Helsinki University of Technology (now part of Aalto University) in Finland. [www.pablocesar.me](http://www.pablocesar.me)

# COMPUTER SCIENCE CLOSE TO REAL WORLD

Pablo Cesar, group leader of the Distributive and Interactive Systems group at Centrum Wiskunde & Informatica (CWI) and Associate Professor at TU Delft, is the recipient of the 2020 Netherlands Prize for ICT Research. His work is about modelling and controlling complex collections of media objects. 'We need human-centred computing, as otherwise, we may get the wrong type of intelligent machines'.

By Bennie Mols

Image Elodie Burrillon

### How would you characterise your work?

'The two main pillars of my group's work are affective computing and human-centred multimedia systems. First, you need to understand and model the context, intention and state of the users. After that, you can optimise the multimedia system for that intention and context. Examples of the latter include algorithms for better compressing multimedia signals or for orchestrating different media streams in an optimal manner.'

### Can you give some concrete examples?

'We are exploring social virtual reality as a new medium for remote communication and collaboration. Social virtual reality consists of highly immersive and multi-sensory VR-systems. For example, we work together with the Netherlands Institute for Sound and Vision to investigate how to enrich remote access to their collection, and we are trying to start a project with a Dutch hospital to study how to optimise remote consultation, based on SocialVR principles.'

### What are the big challenges in your field?

'One big challenge is understanding of the activity and context of users in real life. This problem can only be studied by combining various scientific disciplines. The second big challenge is to optimise the quality of the experience by transmitting and orchestrating the important bits. The question is not about how fast the bits are transported, but how well they are utilised. The end goal must always be to provide the best possible experience for the user.'

### You study systems in a realistic setting. What is the added value?

'My aim is to bring our research as close as possible to the real world. Lab results are essential, but labs never show the actual high noise in data that you experience in the real world. For example, we are planning to put an installation in the Netherlands Institute for Sound and Vision to gather data from users accessing the archives. Via these data, we can understand the real experience of visitors instead of the experience in some artificial laboratory context. In the past, we have followed this methodology in-the-wild, for example during a theatre play at the National Theatre of China.'

### What drives you in your work?

'We need human-centred computing, as otherwise, we may get the wrong type of intelligent machines. The Netherlands needs to better support human-computer interaction research in computer science, as already happens in the USA or Germany. I hope that the Netherlands Prize for ICT Research helps to further improve the recognition of this important field. In the future, multimedia systems will be intelligent and data-centric. It is up to us to make them human-centred and empathic as well.'