



LAURA CABRERA QUIROS

MACHINES WITH SOCIAL SKILLS

By Reineke Maschhaupt

Human social interactions are for a great part determined by non-verbal behavior like gestures and facial expressions. How can we make a computer aware of these complex social elements? During her PhD research, Laura Cabrera Quiros tried to teach computers to understand human behavior.

Laura Cabrera Quiros obtained her 'Licenciatura' Electronic Engineering and Master Electrical and Electronics Engineering, Embedded Systems at Instituto Tecnológico de Costa Rica. She defended her thesis 'Automatic analysis of human social behavior in-the-wild using multimodal streams' at TU Delft on September 27th 2018.

Why would you want to teach computers social skills?

'Studies have shown that when a virtual agent or robot adjusts its personality towards the user, it becomes more humane and easier to deal with. Humans do not only communicate with words, but also with nonverbal behavior such as movement, proximity and eye gaze. A computer doesn't get these things yet.'

How did you approach this problem?

'We tried to understand human interactions in the wild by collecting a Match&Mingle dataset during a real speed dating event and cocktail party with 92 participants. They were filmed from above and wore a device that measured their movement and proximity to others. With the information from these sensors, we trained the computer to differentiate between personality types by showing it examples of different personalities. The participants also filled out a survey to enable us to map their personalities with the help of social psychologists.'

What was the biggest challenge?

'If you want to study real human social behavior you have to do it in-the-wild. Because this is a lot messier than a lab experiment, my main challenge was to collect the data in a good way. People walked too close to each other during the cocktail party, which was a problem for the cameras. A tiny person could be completely blocked by a big guy. So the two channels –

camera and sensor – really complemented each other.'

Why did you choose to go to Delft University of Technology?

'When I was younger I saw the movie Iron Man. He has this virtual agent J.A.R.V.I.S. that makes jokes and interacts with the personality of Iron Man. I have always dreamt of making one of these virtual agents one day. At the research group in Delft they were looking for a PhD researcher to automatically analyze social behavior and in the future add a social element to machines, so this was perfect.'

What are your plans for the future?

'I recently started a postdoc in a collaboration with Eindhoven University of Technology, the medical center of Eindhoven and Philips. The aim of this project is to bring machine learning to neonatal intensive care units. After that project I want to go back home. It has always been my idea to bring my research and network back to the University of Costa Rica. I'm also bringing students from Costa Rica here to do their final projects in Delft. One already finished and two more are coming next year. The government of Costa Rica gave me a much appreciated scholarship, this is my way of giving back.'