

Your smile gives you away

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Smile and the whole world smiles with you? Well, not necessarily.

In a winning scenario, smiling can decrease your odds of success against the same opponent in subsequent matches, according to new research presented by the USC Institute for Creative Technologies and sponsored

by the U.S. Army Research Laboratory.

People who smiled during victory increased the odds of their opponent acting aggressively to steal a pot of money rather than share it in future gameplay, according to a paper presented in May at the International Conference on Autonomous Agents and Multiagent Systems by USC ICT research assistant Rens Hoegen, USC ICT research programmer Giota Stratou and Jonathan Gratch, director of [virtual humans](#) research at USC ICT and a professor of computer science at the USC Viterbi School of Engineering.

Conversely, researchers found smiling during a loss tended to help the odds of success in the game going forward.

The study is in line with previous research published by senior author Gratch, whose main interest lies both in how people express these tells—an unconscious action that betrays deception—and using this data to create [artificial intelligence](#) to discern and even express these same emotional cues as a person.

"We think that emotion is the enemy of reason. But the truth is that emotion is our way of assigning value to things," said Gratch. "Without it, we'd be faced with limitless choices."

Gratch and other ICT researchers hope to imbue virtual humans and even robots with value-based assessment using emotional pattern recognition and reaction to form what might be called intuition or gut level decision-making.

Grin and bear it, but don't gloat

Part of this research is accounting for the kind of emotion-based reasoning that might lead someone to act against their rational self-

interest for the short-term satisfaction of "payback"—that is, cutting off their nose to spite their opponent's smiling face.

For the AAMAS study, 370 participants played a version of the British television game show Golden Balls, where participants decide to "split" or "steal" a pot of money. If both participants choose "split," they do just that—split the pot. If one player chooses to split with the other stealing, the latter gets the whole thing. If both choose to steal, neither wins.

Each participant was paid \$30, with participants receiving additional tickets for a \$100 lottery generated by their total number of successful "steals" and "splits."

As participants played the game against each other on video Skype, reactions were recorded and encoded using emotion-tracking software that captures muscle movements in the face including cheek, lip and chin raises, dimples, and the compression and separation of lips.

As for the motivations of the players, researchers hypothesize that successful, smiling stealers open themselves to future punishment by the loser, while smiling during such a loss is seen as a gesture toward cooperation and a feeling of mutual success.

Teaching machines the power of a smile

In a similar study Gratch co-authored with ICT senior research associate Gale Lucas and colleagues in 2016, participants were shown to often misread honesty when negotiating with each other because reassuring cues like head movement, positive language and even smiling signal honesty, but actually more frequently represent dishonest action and behaviors.

Gratch has worked closely with the USC Marshall School of Business

over the last several years to incorporate virtual humans that can understand these types of nuances into the study of negotiation. The Institute for Creative Technologies also works with agencies like the U.S. Army to use virtual humans in negotiation scenarios.

From Arthur Samuel's checkers-playing AI of the 1950s and 1960s to the Joshua computer's tic-tac-toe game of mutually assured destruction in the 1983 movie WarGames, artificial intelligence has been depicted as especially well-suited to beating people at their own, somewhat linear and strategy-based games.

IBM's Deep Blue also famously and successfully battled chess master Garry Kasparov in the 1990s, and the computer system Watson did the same with its human opponents on Jeopardy! in 2011.

In the last year alone, different AIs have beaten top players in both the ancient game of Go and professional poker, the latter relying on bluffing, tells and accurate emotional readings of the opponent.

Provided by University of Southern California

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