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Robocomedian, the comic computer

By Roger Highfield, Science Editor
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The dream of developing a computer with a keen sense of humour has edged closer to reality.

A mathematical model to reveal the science of laughter has been devised that not only explains where jokes came from in the first place but suggests that humour is inevitable because it is a kind of error detection mechanism to keep the most complex known machine - the human brain - working efficiently. In short, we laugh at our mistakes to improve performance.

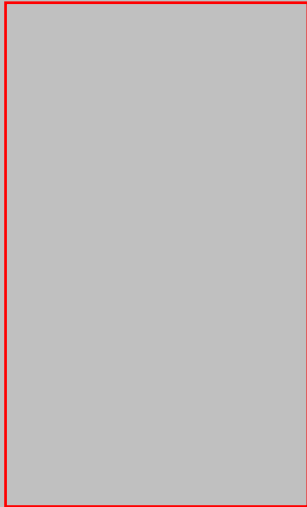
For developers of artificial intelligence, a joke telling machine remains far-fetched and was thought to remain that way until we could understand and even simulate consciousness in a machine.

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But now physicist Igor Suslov at the Kapitza Institute for Physical Problems in Moscow, Russia, suggests a computer program based on his mathematical model, which traces our ability to experience humour to quirks in how the brain handles information, could have an artificial sense of humour. New Scientist reports today that he began to wonder about whether a machine could mint jokes when he performed in student theatre. Now he thinks he sees at least the broad outline of how humour works.

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Take this joke, for example: Father (reprovingly): "Do you know what happens to liars when they die?" Johnny: "Yes sir, they lie still." Such verbal joke play work by making the mind of the observer settle on to one meaning, then spot an error and correct itself. Here the wit rests on how the brain flips between two meanings of "lie".

This kind of error, Suslov argues, is at the root of most humour, and stems from a fundamental difficulty the brain faces when trying to interpret the endless stream of signals from the senses.

The brain often has to settle quickly on an interpretation with insufficient information and errors. "The nature of the processing algorithm makes mistakes inevitable," he says. The good news is that this means humour is inevitable too.

He tells New Scientist that humour is the brain's way of dealing with such errors: a rapid emotional response such as a belly laugh makes us aware of a mistake, and brings new information into consciousness especially swiftly. "Its biological function," says Suslov, "is to make brain operations more efficient."

This sheds light on why familiar, hackneyed jokes don't work, and why the timing of a punchline is crucial. However, he admits that it can't be the whole story, since we don't always laugh when we misread a sentence, or misinterpret an image.

The next step for Suslov is to develop a brain like computer, called a neural net, that can mimic this process, along with the errors, to behave the same way. It may not laugh, but it would react to simple jokes in which there are ambiguous words and meanings. "Of course, this application (computer with humour) can be considered as a popular trick," he tells the Daily Telegraph.

"Nevertheless, I consider its creation to be useful from viewpoint of machine translation," he said, referring to software that translates one language into another. "The treatment of ambiguity in the existing machine translation schemes is rather primitive (several variants are suggested to the consumer), while its adequate treatment is vital from viewpoint of humour.

Ultimately, Suslov suggests, there may be no reason why we won't be able to program computers to tell and understand jokes.

"This is the first real theoretical model I've seen proposed for humour," psychologist Daniel Levine of the University of Texas, Arlington, tells New Scientist. "It's laudable for that. What is lacking is an explanation of what is or isn't humour producing. It's not the case that every phrase that tricks the mind into an error is funny."

"This is an intriguing idea - other evolutionary theories of humour have suggested that laughter is the sound that we make when we are surprised but not threatened," comments Prof Richard Wiseman of the University of Hertfordshire. "Certainly, surprise seems central to lots of puns and even slapstick comedy, however, it will be interesting to see whether computer scientists can model such a complex and unconscious behaviour."

"Most modelling begins with the simplest and most basic form of the phenomenon being studied, which,

given the sense of humour of most computer scientists I know, seems an especially appropriate starting place in this instance."

Computer generated wit is still primitive, as shown by jokes produced by a computer program developed at the University of Edinburgh by Graeme Ritchie and Kim Binsted:

What kind of contest can you drive on?

A duel carriageway.

What kind of line has sixteen balls?

A pool queue.

What kind of pig can you ignore at a party?

A wild bore.

But two examples of computer comedy were surprisingly successful and beat about 250 human jokes:

What do you call a ferocious nude?

A grizzly bare.

What kind of murderer has fibre?

A cereal killer.

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