

Meet Nadine, the humanoid robot set to become your PA and even care for dementia patients

- 'Nadine' is being touted as the next generation of 'social robot'
- It has its own personality and could appear in offices in the future
- Other telepresence robots can be controlled remotely by users
- These robots mimic gestures and show facial expressions in real-time
- The social robots have been developed by researchers in Singapore

By [ASSOCIATED PRESS](#) and [RYAN O'HARE FOR MAILONLINE](#)

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With her brown hair, soft skin and expressive face, Nadine is a new brand of human-like robot that could one day, scientists hope, be used as a personal assistant or care provider for the elderly.

The 1.7-metre tall Nadine was created in the likeness of its maker, Nadia Thalmann, a visiting professor and director of Singapore's Nanyang Technological University's Institute of Media Innovation who has spent three decades researching into virtual humans.

Nadine's software allows the robot to express a range of emotions and recall a previous conversation.

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Nadine (pictured left) is the next generation of social robots that may appear in offices and care homes in future. Developed by Professor Nadia Thalmann (pictured right), at Nanyang Technological University in Singapore, the humanoid is capable of expressing emotions and remembering your last interaction

Nadine is not commercially available, but Thalmann predicted robots could one day be used as companions for people living with dementia.

'If you leave these people alone they will be going down very quickly.'

'So these people need to always be in interaction,' Thalmann said, adding Nadine could provide conversation, tell a story or play a simple game.

Thalmann and her team are also working on emotive robots that can play with children.

The project is still in the early development stage and no prototype is available yet.

The child robot would be able to respond to questions, display emotions and recognize people.

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Aside from being a social companion, the child robot could supervise unattended children and inform a parent or nanny if something went wrong, Thalmann said.

There are plans to program the child robot to speak different languages so that it can serve as an educational tool for children, she said.

'A child has toys but they are usually passive.

'This robot will be an active toy which interacts with the child,' said Thalmann.

'It will be able to remember what the child likes.'

Nadine is touted as the latest in a **new generation of robots**, capable of conversing with people, adapting their responses and remembering previous conversations.

Realistic looking robot Nadine chats and shakes hands



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The advanced robot is the creation of Professor Nadia Thalmann, director of the Institute for Media Innovation at Nanyang Technological University in Singapore.

According to Professor Thalmann, the humanoid has her own personality and is capable of displaying positive and negative moods and emotions.

A video of the robot in action sees her answer questions from her creator in a pseudo-emotional computerised Scottish accent.

'You are a beautiful and attractive social robot,' says Professor Thalmann.

To which Nadine replies: 'Thank you. You look attractive too.'

The android can also react appropriately to negative sentiments.

For instance, when Professor Thalmann says 'I hate you', Nadine replies with a chipper: 'Tell me more about that'.



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The technology could let humans send their robot to work, while they stay at home. This is reminiscent of the robots in *Surrogates*, in which Bruce Willis and Rosamund Pike live their everyday lives through robotic versions of themselves, which they control from the safety of their homes (pictured)

This new wave of social robots could ultimately be commercialised for use as personalised assistants in the workplace, and even as companions for children and the elderly.

The technology could also be rolled out at much lower cost, by appearing on a screen or monitor.

'Robotics technologies have advanced significantly over the past few decades and are already being used in manufacturing and logistics,' said Professor Thalmann.

'As countries worldwide face challenges of an ageing population, social robots can be one solution to address the shrinking workforce, become personal companions for children and the elderly at home, and even serve as a platform for healthcare services in future.'

In addition to the lifelike Nadine, NTU is working on several 'telepresence' robots that could be used to carry out work remotely.

Edgar is another of this team's creations.

While Edgar doesn't have the human-like facial features of Nadine, it does provide a glimpse into the workplace of the future.

This type of telepresence robot can be controlled remotely by users from anywhere in the world.

Users simply stand in front of a specialised webcam and their upper body gestures are projected by the robot.

In addition, their facial expressions can be displayed on the robot's face, in real-time.

These next-generation robots could take us into sci-fi territory, as seen in movies such as *Surrogates*, in which Bruce Willis and Rosamund Pike live their everyday lives through robotic versions of themselves, which they control from the safety of their homes.

THE RISE OF 'UNCANNY VALLEY'

Nadine's lifelike features place her well within the 'uncanny valley' - the realm in which robots become just about human enough to be realistic.

Researchers from the University of California in San Diego tested why we are creeped out by these robots.

The gap between how we expect them to move and how they actually move causes confusion in the part of our brain which governs body movement.

The parietal cortex connects the section of the brain which processes body movements to the part which deals with how we relate to such movements.

According to the researchers, this is where the conflict takes place, which leads to the feeling of being 'spooked out'.

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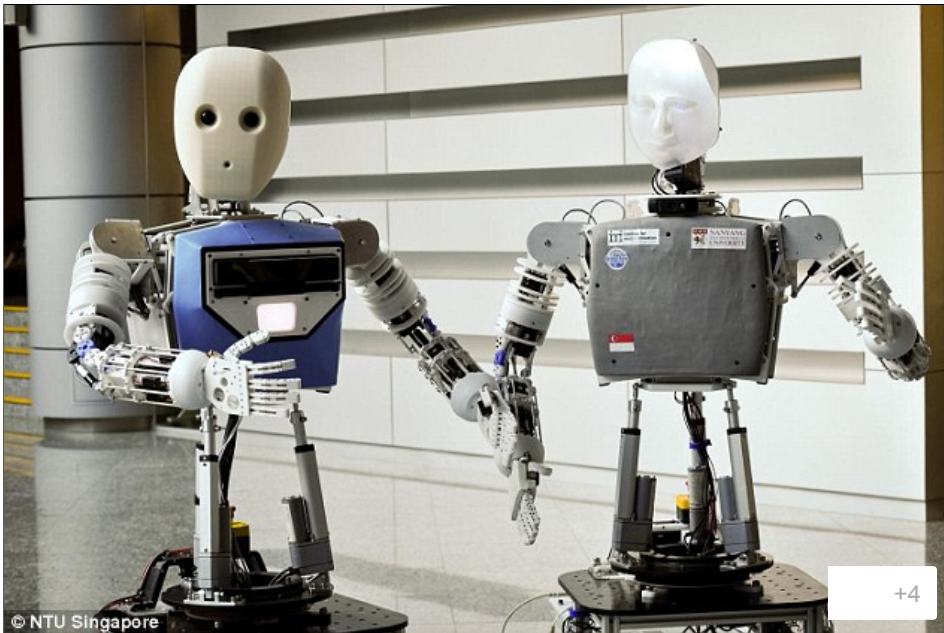


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Kris Jenner wraps up in fur-lined poncho and sexy over-the-knee boots as she treats herself to a shopping spree in Paris. Inspired by Fashion Week





© NTU Singapore

Other robots being developed by the team at NTU include Edgar (two generations pictured left and right). These robots can be controlled remotely by users from anywhere in the world. Users simply stand in front of a specialised webcam and their upper body gestures are projected by the robot

Professor Thulmann added: 'Over the past four years, our team at NTU have been fostering cross-disciplinary research in social robotics technologies -involving engineering, computer science, linguistics, psychology and other fields - to transform a virtual human, from within a computer, into a physical being that is able to observe and interact with other humans.

She added: 'This is somewhat like a real companion that is always with you and conscious of what is happening.

'So in future, these socially intelligent robots could be like C-3PO, the iconic golden droid from Star Wars, with knowledge of language and etiquette.'



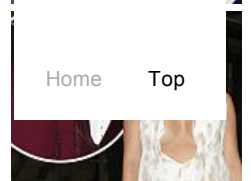
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Nadine is pictured right in the black dress with Professor Thalmann in the red dress. This new wave of social robots could ultimately be commercialised for use as personalised assistants in the workplace, and even as companions for children and the elderly

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Reminded us she has a figure to die for



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