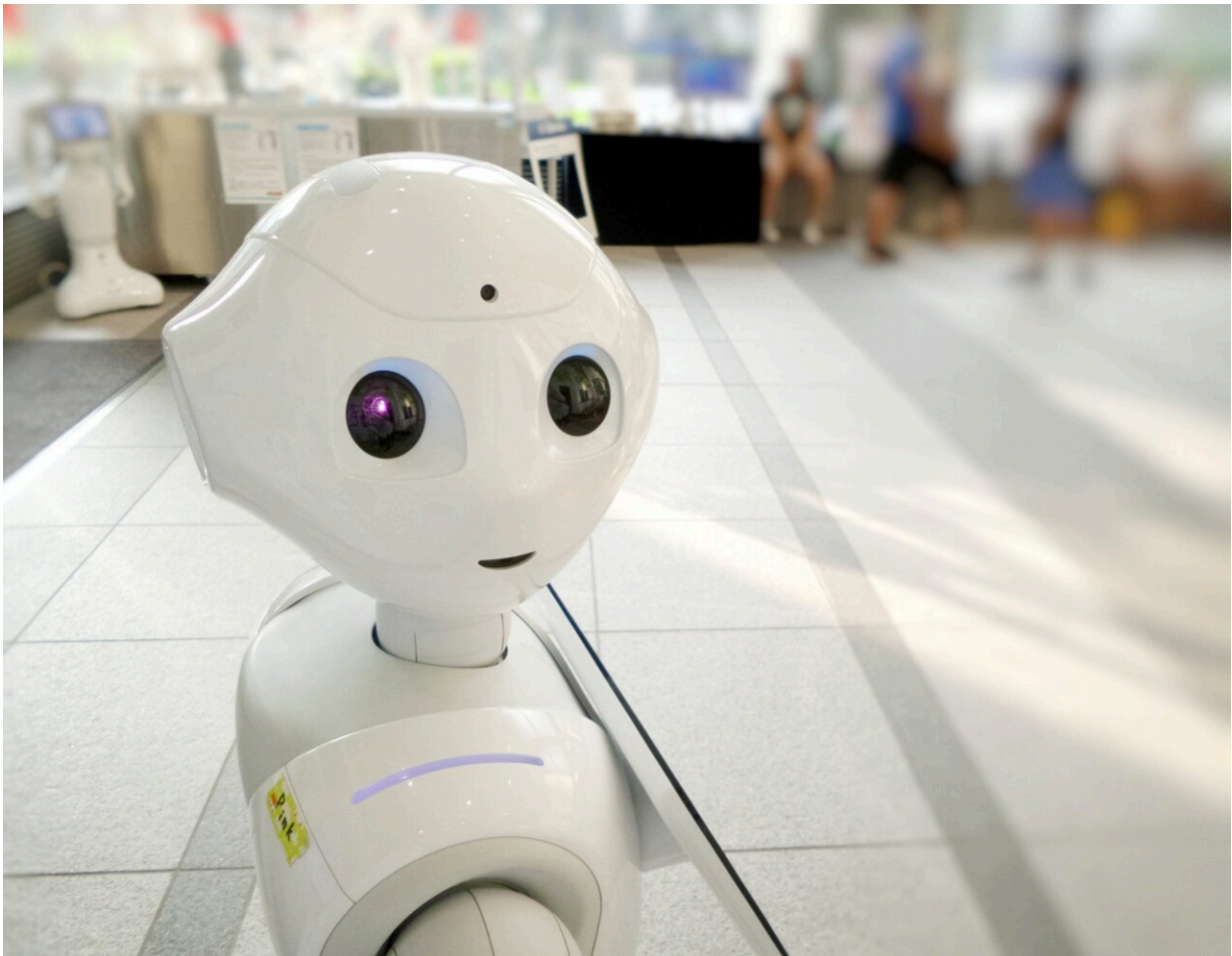


Could AI-powered robot 'companions' combat human loneliness?

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Companion robots enhanced with artificial intelligence may one day help

alleviate the loneliness epidemic, suggests a new report from researchers at Auckland, Duke, and Cornell Universities.

Their report, appearing in the July 12 issue of *Science Robotics*, maps some of the ethical considerations for governments, [policy makers](#), technologists, and clinicians, and urges stakeholders to come together to rapidly develop guidelines for trust, agency, engagement, and real-world efficacy.

It also proposes a new way to measure whether a companion [robot](#) is helping someone.

"Right now, all the evidence points to having a real friend as the best solution," said Murali Doraiswamy, MBBS, FRCP, professor of Psychiatry and Geriatrics at Duke University and member of the Duke Institute for Brain Sciences. "But until society prioritizes [social connectedness](#) and eldercare, robots are a solution for the millions of isolated people who have no other solutions."

The number of Americans with no close friends has quadrupled since 1990, according to the Survey Center on American Life. Increased loneliness and [social isolation](#) may affect a third of the world population, and come with serious health consequences, such as increased risk for mental illness, obesity, dementia, and [early death](#). Loneliness may even be as pernicious a health factor as smoking cigarettes, according to the U.S. Surgeon General Vivek H. Murthy, M.D.

While it is increasingly difficult to make new friends as an adult to help offset loneliness, making a companion robot to support socially isolated [older adults](#) may prove to be a promising solution.

"AI presents exciting opportunities to give companion robots greater skills to build social connection," said Elizabeth Broadbent, Ph.D.,

professor of Psychological Medicine at Waipapa Taumata Rau, University of Auckland. "But we need to be careful to build in rules to ensure they are moral and trustworthy."

Social robots like the ElliQ have had thousands of interactions with human users, nearly half related to simple companionship, including company over a cup of tea or coffee. A growing body of research on companion robots suggests they can reduce stress and loneliness and can help older people remain healthy and active in their homes.

Newer robots embedded with advanced AI programs may foster stronger social connections with humans than earlier generations of robots. Generative AI like ChatGPT, which is based on large language models, allows robots to engage in more spontaneous conversations, and even mimic the voices of old friends and loved ones who have passed away.

Doctors are mostly on board, too, the authors point out. A Sermo survey of 307 care providers across Europe and the United States showed that 69% of physicians agreed that social robots could provide companionship, relieve isolation, and potentially improve patients' mental health. Seventy percent of doctors also felt insurance companies should cover the cost of [companion robots](#) if they prove to be effective friendship supplement. How to measure a robot's impact, though, remains tricky.

This lack of measurability highlights the need to develop patient-rated outcome measures, such as the one being developed by the authors. The "Companion Robot Impact Scale" (Co-Bot-I-7) aims to establish the impact on physical health and loneliness, and is showing that companion machines might already be proving effective.

Early results from Broadbent's lab, for example, find that amiable androids help reduce stress and even promote skin healing after a minor

wound.

"With the right ethical guidelines," the authors conclude in their report, "we may be able to build on current work to use robots to create a healthier society."

In addition to Dr. Doraiswamy and Professor Broadbent, study authors include Mark Billingham, Ph.D., and Samantha Boardman, M.D.

Professor Broadbent and Dr. Doraiswamy have served as advisors to Sermo and technology companies. Dr. Doraiswamy, Professor Broadbent, and Dr. Boardman are co-developers of the Co-Bot-I-7 scale.

More information: Elizabeth Broadbent et al, Enhancing social connectedness with companion robots using AI, *Science Robotics* (2023). [DOI: 10.1126/scirobotics.adi6347](https://doi.org/10.1126/scirobotics.adi6347)

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