

SMU-Duke-NUS study offers new framework for understanding how AI companions may shape social inequality

Joint research highlights the importance of equitable safeguards as AI companions become more widely adopted

Singapore, 22 September 2026 – As AI companions become more commonplace, new research from [Singapore Management University \(SMU\)](#) and [Duke-NUS Medical School](#) argued that the real question is no longer whether these technologies are beneficial or harmful, but who benefits, who is most at risk, and how society can ensure AI serves everyone equitably.

Published recently in [Nature Human Behaviour](#), the paper titled **How AI companions could deepen social inequality**, introduced a new framework for understanding how AI companions may shape existing social inequalities. The study was led by first author [Zhang Qiyang](#) (张起阳), Assistant Professor in Learning Analytics from [SMU College of Integrative Studies](#), Zhang Renwen, Nanyang Assistant Professor from the Wee Kim Wee School of Communication and Information at Nanyang Technological University, and senior author [Liu Nan](#) (柳楠), Associate Professor from the [Centre for Biomedical Data Science](#) at Duke-NUS Medical School.

Rather than viewing AI companions through a simple "good or bad" lens, the researchers examined how differences in users' social support, technology design and governance can lead to uneven outcomes, and outlined practical recommendations to help policymakers, technology developers and users maximise the technology's benefits while mitigating its risks.

"The debate around AI companions has largely focused on whether the technology is beneficial or harmful. Our research shows that this is the wrong question," said Assistant Prof Zhang. "The more important question is who benefits, who bears the risks, and why those outcomes are so unevenly distributed. Without deliberate safeguards, AI companions risk reinforcing existing social inequalities, leaving those who most need human support the most exposed to harm."

Why AI companions benefit some people more than others

The study introduced a new framework for understanding how AI companions may reinforce existing inequalities across three interconnected dimensions: users, platform design and governance. Rather than viewing risks in isolation, the framework showed how these factors interact to shape unequal outcomes, and proposed practical interventions at each level.

The study unveiled a key insight of a "rich-get-richer" dynamic in human relationships. People with strong family ties and social networks are more likely to use AI companions to supplement existing relationships. For example, to rehearse difficult conversations or manage stress.

In contrast, those who are lonely, socially isolated or have limited access to mental health support are more likely to rely on AI companions as a substitute for human connection. Over time, this reliance may contribute to social deskilling - the gradual erosion of interpersonal skills through reduced opportunities to practise authentic human interaction.

A systems approach to understanding AI risks

To explain how these inequalities emerge, the study adapted the Swiss cheese model, a framework widely used in engineering and safety science to explain how multiple small failures align to produce larger systemic risks.

Instead of viewing AI companionship as a problem caused by any single factor, the study argued that harm occurs when several protective layers fail simultaneously. These included users' AI literacy, social support networks, platform design choices and regulatory oversight.

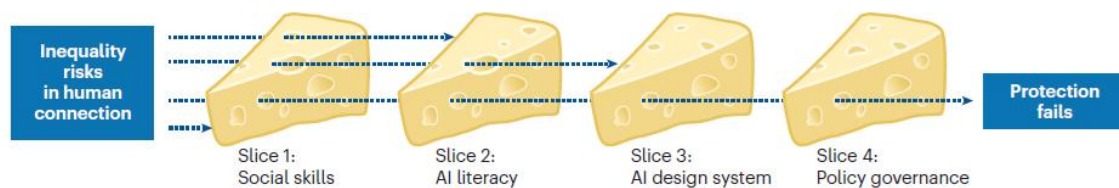


Fig. 1: The Swiss cheese model, a framework widely used in engineering and safety science to explain how multiple small failures align to produce larger systemic risks. (Source: Nature)

Each layer held weaknesses, or "holes". When these weaknesses aligned, vulnerable users became significantly more exposed to harmful outcomes.

According to the study, this systems perspective represented a significant shift from existing approaches that tend to focus on individual users, technology companies or regulation in isolation.

Governance remains the largest gap

Among the four protective layers examined, the study identified governance as the most pressing concern.

Despite increasingly being used for emotional support and mental well-being, AI companions currently occupy a regulatory grey area in many countries. Most are governed as consumer applications rather than technologies with potential psychosocial or mental health impacts.

According to the study, recognising AI companions as health-related technologies could unlock stronger protections, including:

- age-appropriate design requirements;
- transparent disclosure that users are interacting with AI;
- limits on emotionally manipulative engagement features;
- clearer data governance and privacy standards; and
- mandatory crisis-response protocols for users disclosing self-harm or other high-risk situations.

Assistant Prof Zhang is also developing a global policy dashboard tracking countries' governance frameworks for AI mental health technologies. Early findings indicate that many jurisdictions have yet to establish dedicated policies or guidelines for AI companions.

Why the research matters for Singapore

The study highlighted Singapore as both particularly well positioned and uniquely exposed to the rapid rise of AI companionship.

Singapore's advanced digital infrastructure, strong policymaking capabilities and history of proactive technology governance position it to lead internationally in developing responsible safeguards.

At the same time, high smartphone adoption, widespread AI usage, an ageing population, growing numbers of older adults living alone, and increasing concerns around youth mental health and loneliness create conditions where AI companions are likely to be adopted quickly, particularly among vulnerable groups.

"The rapid evolution of AI companions presents an opportunity to shape their role in society before widespread adoption outpaces governance. Young people, in particular, may be less equipped to recognise the limitations or commercial incentives behind these systems, making thoughtful safeguards especially important. We hope this research contributes to a broader conversation on how AI can support human wellbeing while strengthening, rather than replacing, meaningful human connections," commented Assoc Prof Liu, who is also the Director of the [Duke-NUS AI + Medical Sciences Initiative \(DAISI\)](#).

Recommendations for policymakers

Building on its framework, the study outlined practical measures to help ensure AI companions enhance rather than erode social wellbeing:

- 1. Recognise AI companions as technologies with psychosocial and mental health implications**
 - Rather than regulating them solely as consumer or entertainment applications, the researchers argue that AI companions warrant governance frameworks proportionate to their potential influence on users' emotional wellbeing.
 - Such an approach could support age-appropriate design standards, clearer disclosure that users are interacting with AI, stronger privacy protections and consistent crisis-response protocols.
- 2. Adopt a layered governance approach**
 - The study argues that no single intervention can adequately address the risks associated with AI companionship. Instead, policymakers should combine regulation with efforts to strengthen AI literacy, encourage responsible platform design and support real-world social connection, reducing the likelihood that vulnerable users become overly reliant on AI for emotional support.

"The future impact of AI companions will depend less on the technology itself than on how society chooses to design, govern and use it. By combining thoughtful regulation, responsible product design and stronger public AI literacy, AI companions can complement human relationships while reducing the risk of exacerbating existing social inequalities," said Assistant Prof Zhang.

To access the full study, please click [here](#).

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About Singapore Management University

Singapore Management University (SMU) is Asia's premier global city university at the nexus of management, social sciences and technology. Established in 2000, the University's vision foregrounds its DNA in driving innovations, transcending boundaries and transforming lives. SMU's mission is to nurture a community of independent lifelong learners and change agents, enable world-class researchers to address societal challenges, harness partnerships to serve as gateway between Asia and the world, and transform lives to create sustainable futures.

Recognised for its award-winning pedagogy, SMU's interactive, collaborative and practice-oriented education prepares graduates to be agile, adaptive and ready to create meaningful impact across business, government and society. SMU graduates are consistently ranked among the most employable in Singapore, and command one of the highest mean starting salaries.

SMU offers a future-oriented suite of undergraduate, postgraduate professional and postgraduate research programmes through six schools and two colleges: School of Accountancy, Lee Kong Chian School of Business, School of Economics, School of Computing and Information Systems, Yong Pung How School of Law, School of Social Sciences, College of Integrative Studies, and College of Graduate Research Studies. Their programmes include multidisciplinary and interdisciplinary pathways that reflect the complex challenges of today's world.

SMU's research is rigorous, high-impact and interdisciplinary, addressing globally relevant issues from an Asian perspective. Its faculty also collaborates with leading researchers, universities, industry, government and community partners to advance knowledge, shape policy and practice, and deliver real-world solutions.

Located in the heart of downtown Singapore, SMU's city campus strengthens its strategic linkages with business, government and the wider community, enabling the University to turn ideas into action and create impact where it matters.

<https://www.smu.edu.sg/>

About Duke-NUS Medical School

Duke-NUS is Singapore's flagship graduate entry medical school, established in 2005 with a strategic, government-led partnership between two world-class institutions: Duke University and the National University of Singapore (NUS). Through an innovative curriculum, students at Duke-NUS are nurtured to become multi-faceted 'Clinicians Plus' poised to steer the healthcare and biomedical ecosystem in Singapore and beyond. A leader in ground-breaking research and translational innovation, Duke-NUS has gained international renown through its five Signature Research Programmes and ten Centres. The enduring impact of its discoveries is amplified by its successful Academic Medicine partnership with Singapore Health Services (SingHealth), Singapore's largest healthcare group. This strategic alliance has led to the creation of 15 Academic Clinical Programmes, which harness multi-disciplinary research and education to transform medicine and improve lives.

For more information, please visit www.duke-nus.edu.sg