

## # Research Spotlight

# HOW ARTIFICIAL ATTENTION SHAPES HUMAN INTENTION

### The Rise of Humanoid Service Robots

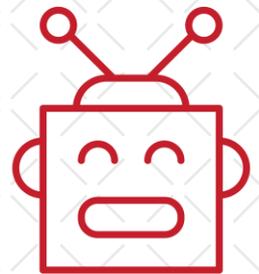
Humanoid service robots are the service providers of the future: They will serve us food in restaurants with a warm smile or provide us with competent advice on investment decisions. The technological advancement in AI provides robots with increasingly human-like skills. Companies employing humanoid service robots benefit from reduced labor costs and increased availability<sup>1</sup>. The market for humanoid service robots is booming, and the average annual growth of sales is already higher for professional services robots than for industrial robots<sup>2</sup>. Jobs with mechanical and analytical tasks will be replaced by AI in the short term and even jobs with intuitive and empathetic skills are expected to be replaced in the next few decades<sup>3</sup>. For example, more than 10,000 humanoid robots are already performing waiters' tasks in restaurants<sup>4</sup>. The Spanish Association of Hotel Managers expects that 42% of waiters in hotels will be replaced by robots in 2023, and 96% of hotel receptionists will be replaced by 2029<sup>5</sup>.

### Consumers' Response to Humanoid Robots

The emergence of humanoid robots is expected to revolutionize the service sector<sup>2</sup>. However, empirical research on this disruptive innovation is still scarce. One of the pressing questions is: How will consumers respond to humanoid service robots? Theoretically, humanoid service robots can offer many benefits to consumers such as convenience, flexibility, availability, and efficiency, but reduced trust may hinder consumer adoption.

### Robo-Advisors in Finance

Trust plays an important role, especially in financial services, where products are complex, and huge amounts of money are at stake. Many financial institutes are already employing so-called robo-advisors to provide online customers with personalized investment recommendations. However, automating financial services while maintaining customer trust is a great challenge. Most recent robo-advisors come with a text-based interface. Integrating a human-like virtual agent or a humanoid robot is a promising approach to gain trust. We investigate how employing human-like agents as robo-advisors impacts consumers' trust and investment decisions.



Photos: Furhat Robotics

1. Negahban, A., Smith, J.S.(2014). Simulation for manufacturing system design and operation.. Journal of Manufacturing Systems 33, 241–261.
2. Belanche, D., Casalo Ariño, L., & Flavian, C. (2020). *Customer's Acceptance of Humanoid Robots in Services: The Moderating Role of Risk Aversion* (pp. 449–458).
3. Huang, M.H., & Rust, R.T.(2018). Artificial intelligence in service. Journal of Service Research 21(2), 155–172.
4. Mende, M., Scott, M.L., van Doorn, J., Grewal, D., Shanks, I(2019). Service robots rising: How humanoid robots influence service experiences and elicit compensatory consumer responses. Journal of Marketing Research 56(4), 1–22.
5. [https://www.abc.es/espana/comunidad-valenciana/abci-como-seran-hoteles-futuro-sin-recepcionista-robots-camarero-o-cocinero-y-comida-sana-201906112007\\_noticia.html](https://www.abc.es/espana/comunidad-valenciana/abci-como-seran-hoteles-futuro-sin-recepcionista-robots-camarero-o-cocinero-y-comida-sana-201906112007_noticia.html), <https://www.elmundo.es/viajes/el-baul/2019/07/27/5d3ac4defddff83558b45b7.html>, last accessed 2011/03/16.



# What do we already know about the eye contact with human-like robo-advisors in financial decision-making?

## Important Publications

**Computers Are Social Actors**  
Nass, Steuer & Tauber, 1994

**Social Eye Gaze in Human-Robot Interaction: A Review**  
Admoni & Scassellati, 2017

**Designing a Robo-Advisor for Risk-Averse, Low-Budget Consumers**  
Jung, Dorner, Weinhardt & Puzmaz, 2018

**The Effect of Humanizing Robo-Advisors on Investor Judgments**  
Hodge, Mendoza & Sinha, 2020

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### Anthropomorphism: The Computers Are Social Actors Paradigm

According to the Computers Are Social Actors paradigm, human-computer interaction follows the same rules as human-human interaction, especially when machines have anthropomorphic cues. Several studies revealed that higher levels of anthropomorphism lead to higher trust in robots. Similarly, research about recommendation agents has demonstrated that social presence enhances users' trust and usage intentions. Although the impact of some human-like features on trust has been explored, it is unclear which features increase trust in which way.

### Anthropomorphic Cue: Eye Contact

Eye gaze is a primary nonverbal signal in social interaction among humans with a high impact on people's attention, arousal, memory, and trust. In sales, the eye contact of a salesperson has the power to increase consumers' satisfaction and even their buying intention. While the impact of eye contact in human-human interactions is well understood, the impact of eye contact in human-machine interaction still raises many questions. Studies comparing the impact of eye contact in human-machine interactions to human-human interactions have found similar but also dissimilar effects. This contradicting evidence raises the question of how eye contact with a robot impacts consumers' trust and decision-making in service encounters.

### Anthropomorphic Advisors: The Case of Finance

A recent study demonstrated the importance of trust in automated financial services by robo-advisors. Participants requested a personal conversation with the human advisor before using the robo-advisor for their investment. In this conversation, participants did not ask for more information about the investment product but wanted to double-check the trustworthiness of the robo-advisor. The question arises if a human advisor is necessary to promote the trustworthiness of the robo-advisor or if a more human-like robo-advisor might also increase the consumers' trust and acceptance of the robo-advisor's investment recommendation.

Computers Are Social Actors' theory would suggest that increased human-likeness of the robot-advisor also increases consumers' trust in the robo-advisor. However, a recent study found that investors are more likely to adopt the recommendation of a robo-advisor with a low level of human-likeness. This contradicting evidence raises the question of how the eye contact with a robo-advisor impacts consumers' trust and investment decision in financial services.

STAY TUNED >

UPCOMING STUDY

How does eye contact with a human-like robo-advisor affect consumers' trust and investment decisions?

We investigate this question in an online experiment employing state-of-the-art social robots.