Ruben **Janssens**

PhD Researcher · Human-Robot Interaction

IDLab-AIRO, Department of Electronics and Information Systems,
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My research investigates artificial intelligence methods that enable social robots to engage in personalised and adaptive dialogue, using multimodal context to adapt to the user, their cognition and affect, and the environment, building robots that provide a benefit to society in education and healthcare.

Employment

Ghent University – imec — *Ghent, Belgium*
PhD Researcher — *09/2021 – Present*
- Supervisors: Prof Tony Belpaeme and Prof Thomas Demeester
- Research teams IDLab-AIRO (AI & Robotics) and IDLab-T2K (Text to Knowledge)
- Funded by the Flanders AI Research Program, working on Use Case "Collaborative Learning".

Education

Ghent University — *Ghent, Belgium*
Ph.D. in Computer Science Engineering — *09/2021 – Present*
- Thesis subject: Multimodal conversational AI for Human-Robot Interaction
- Supervisors: Prof Tony Belpaeme and Prof Thomas Demeester

KTH Royal Institute of Technology — *Stockholm, Sweden*
Visiting PhD Researcher — *08/2024 – 12/2024*
- Advisors: Prof Gabriel Skantze, Dr Bahar Irfan, and Dr André Pereira
- Joint work published at HRI '25 (Conference publication C-8).

École Polytechnique Fédérale de Lausanne (EPFL) — *Lausanne, Switzerland*
MSc Exchange Semester in Computer Science Engineering — *09/2019 – 01/2020*
- Courses in Machine Learning, Data Analysis, Artificial Intelligence, Robotics, and Neuroscience

Ghent University — *Ghent, Belgium*
BSc & MSc in Computer Science Engineering — *09/2015 – 07/2021*
- MSc Thesis: Augmenting chatbots with visual context for multi-modal Human-Robot Communication, Supervisor Prof Tony Belpaeme, 17/20
- Elective courses in Artificial Intelligence
- Engagement as student representative in Ghent and European Students' Unions, focussing on educational technology policy and mental health, incl. membership of European Higher Education Area Working Group and European University Association Steering Committee on Learning & Teaching

Grants & Awards

2024	**Honourable Mention**, Second place at 2024 ERR@HRI Challenge at the International Conference on Multimodal Interaction (ICMI) (Conference publication C-6)	*San Jose, Costa Rica*
2024	**Travel grant**, Science Foundation Flanders (FWO), providing €5.940,00 (~6450 US$) for a four-month research stay to KTH Royal Institute of Technology	
2024	**HRI Pioneers**, Selected to participate in the Human-Robot Interaction (HRI) Pioneers, a highly selective workshop to foster creativity, communication and collaboration between young researchers, including 1400 US$ travel grant (Conference publication C-5)	*Boulder, CO, USA*

Publications

Book chapters

B-2: Enabling Autonomous and Adaptive Social Robots in Education: A Vision for the Application of Generative AI
Eva Verhelst, **Ruben Janssens**, Tony Belpaeme
Social Robotics in Education: How to effectively introduce Social Robots into classrooms. Springer, 2025

B-1: Higher Education for a Changing World: A Students' Perspective
Ruben Janssens
Lernwelt Hochschule 2030: Konzepte und Strategien für eine zukünftige Entwicklung pp. 61–79. Walter de Gruyter GmbH & Co KG, 2022

JOURNAL ARTICLES (PEER-REVIEWED)

J-1: Integrating Visual Context into Language Models for Situated Social Conversation Starters
Ruben Janssens, Pieter Wolfert, Thomas Demeester, Tony Belpaeme
[Impact Factor: 9.6]
IEEE Transactions on Affective Computing pp. 1–14. 2024

CONFERENCE PROCEEDINGS (PEER-REVIEWED)

C-9 Human Alignment: How Much Do We Adapt to LLMs?
Tanguy Cazalets*, **Ruben Janssens***, Tony Belpaeme, Joni Dambre
[A* Conference, Acceptance Rate: 21.3%], * Equal contribution
Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics, 2025, in press

C-8 Online Prediction of User Enjoyment in Human-Robot Dialogue with LLMs
Ruben Janssens, André Pereira, Gabriel Skantze, Bahar Irfan, Tony Belpaeme
Proceedings of the 2025 ACM/IEEE International Conference on Human-Robot Interaction, 2025, Melbourne, Australia

C-7 Child Speech Recognition in Human-Robot Interaction: Problem Solved?
Ruben Janssens, Eva Verhelst, Giulio Antonio Abbo, Qiaoqiao Ren, Maria Jose Pinto Bernal, Tony Belpaeme
International Conference on Social Robotics, 2024, Odense, Denmark

C-6 Predicting Errors and Failures in Human-Robot Interaction from Multi-Modal Temporal Data
Ruben Janssens, Eva Verhelst, Mathieu De Coster
ACM International Conference on Multimodal Interaction, 2024, San Jose, Costa Rica

C-5 Multi-modal Language Models for Human-Robot Interaction
Ruben Janssens
[Acceptance Rate: 31.25%]
Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction, 2024

C-4 Adaptive Second Language Tutoring Using Generative AI and a Social Robot
Eva Verhelst, **Ruben Janssens**, Thomas Demeester, Tony Belpaeme
Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction, 2024

C-3 Multi-modal Language Learning: Explorations on learning Japanese Vocabulary
Pieter Wolfert, Lisa De Gersem, **Ruben Janssens**, Tony Belpaeme
Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction, 2024

C-2 Limitations of Audiovisual Speech on Robots for Second Language Pronunciation Learning
Saya Amioka*, **Ruben Janssens***, Pieter Wolfert, Qiaoqiao Ren, Maria Jose Pinto Bernal, Tony Belpaeme
[Acceptance Rate: 24%], * Equal contribution
Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction, 2023

C-1 "Cool glasses, where did you get them?" Generating Visually Grounded Conversation Starters for Human-Robot Dialogue
Ruben Janssens, Pieter Wolfert, Thomas Demeester, Tony Belpaeme
Companion of the 2022 ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2022

Invited talks

4/2025	**SPHERE Webinar on AI in Higher Education**, AI for personalised learning and student feedback	*Online*
12/2024	**Seminar at Department of Robotics, Perception and Learning, KTH Royal Institute of Technology**, Building autonomous multi-modal social robots	*Stockholm, Sweden*
12/2024	**Seminar at Department of Speech, Music and Hearing, KTH Royal Institute of Technology**, Building autonomous multi-modal social robots	*Stockholm, Sweden*
11/2024	**Seminar at ROSIELab, Simon Fraser University**, Building autonomous multi-modal social robots	*Online & Burnaby, Canada*
05/2024	**Summer Speaker at MIRRORLab, Colorado School of Mines**, Building autonomous multi-modal social robots	*Online & Golden, CO, USA*
10/2023	**Flanders Artificial Intelligence Research Day**, Can robots see? Vision-and-text models for social robots	*Mechelen, Belgium*

Teaching experience

Teaching Assistance *Ghent, Belgium*
MODELLING, MAKING, AND MEASURING COURSE, GHENT UNIVERSITY *09/2022 – 01/2024*
• Co-creating, supervising and grading the Social Robotics project

Teaching Assistance *Ghent, Belgium*
DIGITAL ELECTRONICS COURSE, GHENT UNIVERSITY *09/2021 – 01/2024*
• Supervising and grading practical sessions on FPGA programming

Thesis and Project Supervision

Supervising master and internship students

- Supervising master thesis and internship students at Ghent University

Mentoring

2024–25	**Seppe Van de Vreken**, Generative Expressive Robot Behaviors using Large Language Models	*Master's Student, Ghent University*
2024–25	**Senne Meuleman, Tim Willaert, Leander Stierman, Henri Lemahieu**, ChessGPT	*Bachelor's Students, Ghent University*
2023–24	**Jens De Bock**, Detecting Robot Mistakes in Human-Robot Conversations Based on Non-verbal Visual Behaviour	*Master's Student, Ghent University*
2023–24	**Pieter Lecompte**, Automatic Assessment of Student's Language Proficiency for Social Robots in Education	*Master's Student, Ghent University*
2023–24	**Wannes De Vos**, Adapting content and language levels using Large Language Models in social robot tutoring	*Master's Student, Ghent University*
2022–23	**Lara Lismont**, Communication Mistakes and Formality in Repair Strategies within Human-Robot Dialogues	*Master's Student, Ghent University & KU Leuven*
2022–23	**Eva Verhelst**, Adaptive second language tutoring through generative AI and social robots (Conference publication C-4). Thesis awarded as finalist for Klasse prize and mtech+ prize for best education- and engineering-related thesis in Flanders. Subsequently enrolled in PhD with four-year PhD scholarship awarded by Science Foundation Flanders (FWO).	*Master's Student, Ghent University*
2022–23	**Elke Remy**, Paralinguistic communication in Human-Robot Interaction	*Master's Student, Ghent University*
2022–23	**Niels Vanden Bussche**, The Impact of Personalised Conversation Openers on Engagement with Social Robots	*Master's Student, Ghent University*
2021–22	**Bernd Vandenhende**, Detection of Communication Breakdowns and Automatic Repair in a Human-Robot Conversation	*Master's Student, Ghent University*
2021–22	**Lisa De Gersem**, Second language learning with a multimodal social robot: tutoring Japanese vocabulary (Conference publication C-3)	*Master's Student, Ghent University*
2021–22	**Saya Amioka**, Realistic Audiovisual Speech on Robots for Second Language Pronunciation Learning (Conference publication C-2)	*Internship Student, Ghent University & The University of Electro-Communications, Tokyo*

Outreach

2025	**TAJO**, Science and technology workshop for 10-14 year-old at-risk children.	*Ghent, Belgium*
2024	**Flanders AI Forum**, Demonstration of conversational social robots at government-organized artificial intelligence fair for Flemish companies.	*Ghent, Belgium*
2023	**Festival van de Toekomst**, Demonstration of language tutoring robot at government-organized technology fair for East-Flemish companies.	*Aalst, Belgium*
2023	**De Sprokkel**, Popularizing article about artificial intelligence in local magazine.	*Belgium*
2023	**Flanders AI Forum**, Invited talk about multi-modal language models in social robotics for audience of companies, policy makers and researchers.	*Antwerp, Belgium*
2023	**Learning Bytes**, Demonstration of multi-modal conversational social robot at educational technology fair.	*Kortrijk, Belgium*
2022	**imec Open Company Day**, Demonstration of multi-modal conversational social robot for the general public.	*Leuven, Belgium*
2022	**Zomerwijs**, Workshop about social robots for Ukrainian refugee children.	*Ghent, Belgium*
2022	**Nerdland Festival**, Citizen science experiment with multi-modal conversational social robot at Flanders's largest science festival (Journal article J-1).	*Wachtebeke, Belgium*
2022	**imec FutureSummits / ITF**, Demonstration of multi-modal conversational social robot at high-profile technology fair aimed at companies and policy makers.	*Antwerp, Belgium*
2022	**AI Film Festival**, Demonstration of social robots for children as part of the Ghent AI Film Festival.	*Ghent, Belgium*

Academic service

General Chair / Main Organizer

Pioneers Workshop at ACM/IEEE International Conference on Human-Robot Interaction (HRI) 2025

2022 HRI Winter School on Embodied AI in Ghent, Belgium (incl. raising €20,000 of grants and sponsorship)

Organizing Committee Member

2022 Faculty of Engineering and Architecture Research Symposium

Student Volunteer

ACM/IEEE Int. Conference on Human-Robot Interaction (HRI), 2022 & 2024

Referee for Journal Articles

IEEE, Robotics and Automation Letters

Frontiers in Robotics and AI

Referee for Conference Proceedings

ACM CHI Conference on Human Factors in Computing Systems, 2025

International Conference on Social Robotics, 2024

IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), 2024

IEEE International Conference on Robotics and Automation (ICRA), 2024

ACM Conversational User Interfaces Conference, 2023

European Symposium on Artificial Neural Networks, 2023

ACM/IEEE Int. Conference on Human-Robot Interaction (HRI), 2022–2025

University Governance and Higher Education Policy

Elected member of the Council of the Faculty of Engineering and Architecture, 2024 – Present

Expert for Bologna Hub Peer Support II Project, counselling universities in Bulgaria and Ukraine, 2022-2024

Moderator for Seminar on AI in Higher Education for the Asia-Europe Meeting, 2023 & 2024

Member of the Ghent University Education Council, 2022 – Present

Invited panel speaker at Online Educa Berlin EdTech conference, 2021

Member of the Computer Science Engineering study programme committee, 2021 – Present

Member of the Executive Committee of the European Students' Union, 2021 – 2022

Member of the Working Group on Learning and Teaching of the European Higher Education Area, 2021 – 2022

Member of the Learning and Teaching Steering Committee of the European University Association, 2021 – 2022