# Giorgio Colombo, PhD.

**UX Researcher**
*PhD graduated in:*
Future Health Technologies **| Singapore–ETH Centre**
Chair of Cognitive Science **| ETH Zürich**

**Personal Details**
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***Professional Summary***

*UX Researcher with a PhD in Cognitive Science and Future Health Technologies from ETH Zurich and the Singapore-ETH Centre. I led the full lifecycle of the Spatial Performance Assessment for Cognitive Evaluation (SPACE), a serious-game cognitive assessment tool recognised as an ACM CHI 2023 finalist. I guided SPACE from concept and design through clinical- and population-level validation, including usability evaluation (performance and self-report), clinical diagnosis, imaging and fluid biomarkers (MRI, blood, saliva), and wearable-sensor gait data. I also contributed to the conceptualisation and development of an AI-enabled mobile platform that combines passive mobility tracking with LLM-based conversational avatar to detect disorientation indicative of cognitive impairment. Across projects, I collaborated closely with computer scientists, designers, engineers, and clinicians, and routinely communicated research findings to governmental representatives and to clinical and industry stakeholders. Skilled in experimental design, mixed-method research, from usability studies and interviews to large-scale behavioural analysis. Nominated for the ETH Medal for Outstanding Doctoral Theses, I bring strong interest in applied AI, user experience, and interdisciplinary teamwork.*

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## Key competences

**Product ownership |** Led end-to-end development of SPACE, from concept definition and UX design to clinical and population-level validation in research and healthcare environments.

**Experimental & mixed-methods analytics |** Designed experiments and analysed cross-sectional and longitudinal data using regression, ANOVA, mixed-effects models, and ROC analyses; complemented quantitative findings with contextual inquiry, interviews, surveys, and thematic qualitative analysis.

**User-centred evaluation |** Led mixed-method usability research to inform product strategy, including test–retest reliability assessment, control-interface comparisons, UI assistance tooling, and task-difficulty scaffolding; combined task-based evaluation with behavioural performance measures, usability scales (e.g., SUS/UEQ/NASA-TLX), and qualitative feedback to improve accessibility, interaction flow, and sustained engagement across diverse users.

**Clinical validation |** Validated SPACE against diagnosis, imaging and fluid biomarkers (MRI, blood, saliva), and wearable-sensor gait data in ageing and memory-clinic cohorts to demonstrate clinical utility.

**AI-conversational app:** Co-designed the Multimodal Intervention for Navigation Deficits (MIND), a mobile platform combining passive GPS/LGM-based navigation sensing with LLM-driven conversational agents to detect everyday disorientation, flag early cognitive decline, and personalise in-app training and care pathways.

**Cross-functional collaboration |** Worked with computer scientists, designers, engineers, and clinicians to define requirements, iterate prototypes, and support deployment in clinical and population-based settings.

**Stakeholder engagement |** Synthesised research insights and presented strategic recommendations to senior institutional and governmental stakeholders, including health-policy decision-makers.

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## Professional Experience

**2025 |** Consultant for data analysis for ETH Zürich (Switzerland) and Bond University (Australia).

**2020 - 2025 |** PhD Researcher at ETH Zürich in Early Detection of Health Risks and Prevention, Future Health Technologies, Singapore–ETH Centre and Chair of Cognitive Science ETH Zürich.

**2019 - 2020 |** Researcher, Ageing and Dementia Centre – Wayfinding and Dementia, Bournemouth University.

**2019 |** Researcher, Memory & Learning Lab, University of Padova.

**2017 |** Researcher, Erasmus+ Traineeship, Quality & Usability Lab, Telekom Innovation Laboratories, TU Berlin.

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## Education

**2020 - 2025 |** PhD Researcher at ETH Zürich in Cognitive Sciences, Future Health Technologies, Singapore–ETH Centre.

**2015 - 2018 |** Master Degree (MSc) in Psychology, University of Padova.

**2013 - 2014 |** Student, Erasmus+, Faculty of Psychology, Paris Diderot University - Paris 7.

**2012 - 2015 |** Bachelor Degree (BSc) in Cognitive and Psychobiological Sciences, University of Padova.

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## Scientific publications

Tian, N., **Colombo, G.**, & Schinazi, V. R. (n.d.). From play to detection: Mini-SPACE as a serious game for unsupervised cognitive impairment screening. *(Submitted to Transactions on Computer–Human Interaction).*

**Colombo, G.,** Minta, K., Taylor, W. R., Grübel, J., Chong, E., Chong, J. R., Lai, M. K. P., Chen, C. P., & Schinazi, V. R. (2025). *Spatial navigation as a digital marker for clinically differentiating cognitive impairment severity*. medRxiv. *(Under review at Nature Communications Medicine).*

Pai, S. G. S.*, **Colombo, G.*,** Minta, K.*, Tan, K. Z., Taylor, W. R., Singh, N. B., Schinazi, V., & Ferrario, A. (n.d.). A machine learning-based approach to predicting mild cognitive impairment. *(Manuscript in preparation).*

Tee, M., Padrela, B. E., Dupeyron, M., Huang, J., Low, M., Konstandin, S., Eickel, K., Günther, M., Minta, K., Schinazi, V . R., **Colombo, G.,** Petr, J., Mutsaerts, H. J., & Hilal, S. (2025). *Associations between potential risk factors and blood-brain barrier water permeability in middle-aged and older adults. Journal of Alzheimer's Disease: JAD*, 13872877251314138.

Minta, K.*, **Colombo, G.***, Tee, M.*, Low, M., Grübel, J., Wiener, J., ... & Schinazi, V. (2024). SPACE: A Novel Digital Tool for Assessing Hippocampal Structural Integrity in Older Adults. Research Square. *(Under review at Scientific Reports).*

**Colombo, G.***, Minta, K.*, Thrash, T., Grübel, J., Wiener, J., Avraamides, M., Hölscher, C., & Schinazi, V. R. (*2024*). Beyond traditional assessments of cognitive impairment: Exploring the potential of spatial navigation tasks. *medRxiv*. (*Under review at Behavior Research Methods*).

Schinazi, V. R.*, **Colombo, G.***, Minta, K. (*In press*). Designing Effective Clinical Tools for Measuring Navigational Deficits Associated with Cognitive Impairment: Insights from Human-Computer Interaction Research, *Navigation Research: Mapping the Future, Ernst Strungmann Forum*.

**Colombo, G.***, Minta, K.*, Grübel, J., Eunice, T. W. L., Hölscher, C., & Schinazi, V. R. (2024). Detecting Cognitive Impairment Through an Age-Friendly Serious Game: The Development and Usability of the Spatial Performance Assessment for Cognitive Evaluation (SPACE). *Computers in Human Behavior*, 108349.

Minta, K., **Colombo**, **G.**, Taylor, W. R., & Schinazi, V. R. (2023). Differences in fall-related characteristics across cognitive disorders. *Frontiers in aging neuroscience*, 15, 1171306.

**Colombo, G.**, & Grübel, J. (2023, April). The Spatial Performance Assessment for Cognitive Evaluation (SPACE): A novel game for the early detection of cognitive impairment. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-6).

Segen, V., **Colombo**, **G.**, Avraamides, M., Slattery, T., & Wiener, J. M. (2022). The role of memory and perspective shifts in systematic biases during object location estimation. *Attention, Perception, & Psychophysics*, 84(4), 1208-1219.

Segen, V., Avraamides, M., Slattery, T., **Colombo, G.**, & Wiener, J. M. (2021). Comparable performance on a spatial memory task in data collected in the lab and online. *Plos one*, 16(11), e0259367.

Segen, V., **Colombo, G.**, Avraamides, M., Slattery, T., & Wiener, J. M. (2021). Perspective taking and systematic biases in object location memory. *Attention, Perception, & Psychophysics*, 83(5), 2033-2051.

**** equal contributions***

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## Conferences

**Colombo, G.**, Tee, M., Hilal, S., Schinazi, V. R, Minta, K. (2024, November 21-25, New York, USA). SPACE: A Novel Digital Assessment for Assessing Structural Hippocampal Integrity in Older Adults, 65th Psychonomic Society: Poster.

**Colombo, G.** (2024, June 24-28, Dublin, Ireland). The Spatial Performance Assessment for Cognitive Evaluation (SPACE). ManySpaces: Sharing VR Environments for Studying Navigation, Spatial Cognition Conference Workshop Presentation.

**Colombo, G.**, Minta, K., Trash, T., Eunice, Grübel, J., T. W. L., Hölscher, C., & Schinazi, V. (2024, June 17-21, Meran, Italy). The Spatial Performance Assessment for Cognitive Evaluation (SPACE): Using deficits in navigation to detect cognitive impairment. 5th Interdisciplinary Navigation (iNAV) Symposium: Poster.

**Colombo, G.** (2023, June 25, Gold Coast, Australia). Navigating Spaces Symposium, Bond University: Organisation.

**Colombo, G.**, & Grübel, J. (2023, April 23-28, Hamburg, Germany). The Spatial Performance Assessment for Cognitive Evaluation (SPACE): A novel game for the early detection of cognitive impairment. 2023 CHI Conference on Human Factors in Computing Systems: Conference Presentation.

**Colombo, G.**, Grübel, J., Minta, K., Wiener, J. M., Avraamides, M., Hölscher, C., & Schinazi, V. (2022, Online). The Spatial Performance Assessment for Cognitive Evaluation (SPACE): A novel tablet-based tool to detect cognitive impairment. 4th Interdisciplinary Navigation (iNAV) Symposium: Poster.

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## Grants

**IntraCREATE Seed Collaboration grant |** SPACE: A cognitive training tool to protect against age-related decline. NRF2022-ITS010-0006, Funding: S$ 250,000, National Research Foundation, Prime Minister Office's Singapore, 2022 October 1 - 2024 August 1: Co-Investigator.

**Future Health Technologies 2 (5-year funding) |** Future Health Technologies 2. Module 2 | Blended Monitoring And Interventions For Cognitive And Mental Health. Project 3 | MIND: Monitoring and Supporting Cognitive Health in the Community. Funding: S$ 30.000.000, National Research Foundation CREATE Program, Prime Minister Office's Singapore, Accepted 2025 September 6, Period: March 2026 - March 2031: Writing and Conceptualisation.

## Workshop participations

**2024 |** Basics of UX, 2024, Singapore-ETH Centre, Singapore.

**2024 |** ManySpaces: Sharing VR Environments for Studying Navigation, 2024 Spatial Cognition Conference, TU Dublin.

**2024 |** Building tomorrow's healthcare today: How will AI advance the future of health?, 2024 Zühlke, Singapore.

**2020 |** Understanding Dementia MOOC, Wicking Dementia Research and Education Centre, University of Tasmania.

**2016 |** Workshop of Environmental Psychology: Themes and Interactions - University of Padova.

## Stakeholders & Governamental agencies presentations and demos

**Confindustria Italia Delegation |** 2024, September 16, Singapore–ETH Centre, Singapore.

**Permanent Secretary of National Research and Development & NRF |** 2024, May 16, Singapore–ETH Centre, Singapore.

**Zühlke |** 2024, May 9, Zühlke Singapore.

**STEM Teachers' Fest 2023 |** 2023, November 10, Science Centre Singapore.

**Swiss State Secretary of Education Research and Innovation |** 2023, October 10, Singapore–ETH Centre.

**Rehab Week |** 2023, September 24-27, Resorts World Convention Centre, Sentosa Singapore.

**CEO LTA and LTA Delegation |** 2023, September 12, Singapore–ETH Centre, Singapore.

**ETH Risk Delegation |** 2023, August 28, Singapore-ETH Centre, Singapore.

**Deputy Prime Minister of Singapore |** 2023, July 10, CREATE Symposium, Singapore–ETH Centre, Singapore.

**President of the Swiss National Council |** 2023, June 27, Singapore–ETH Centre, Singapore.

## Student supervision

**Master thesis |** Paola La Spina (UniPd), Simona Margraf (ETH), Martina Neudecker (ETH), Sophia Niklaus (ETH).

## Editorial services

**Ad hoc reviewer |** Journal of Environmental Psychology, MIT Press.

## Awards

**ACM CHI Conference Student Game Competition |** Student Game Competition, ACM CHI Conference on Human Factors in Computing Systems. Hamburg, April 23-28, 2023: Finalist.

**ETH Zurich Medal for Outstanding Doctoral Theses |** Nomination for the ETH Medal 2025 recognising exceptional PhD theses. Thesis title: "*A Blueprint for Digital Tools in Early Detection of Cognitive Impairment: The Development and Validation of the Spatial Performance Assessment for Cognitive Evaluation*".

## Skills

**Statistical software |** R Studio, SPSS, Jasp, Jamovi, Excel

**Graphic software |** Illustrator, InDesign, Photoshop, Figma

**Presentation |** Keynote, Power Point

**Survey software |** Qualtrics, Survey Monkeys

**Experimental design software |** OpenSesame

## Languages

**Italian |** Mother tongue
**English |** Fluent
**French |** Fluent

## References

**Victor R. Schinazi |** Assoc. Prof. Bond University
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**Andrea Ferrario |** Senior Research Assistant
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**Christoph Hölscher |** Full Professor ETH Zürich
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**Karolina Minta |** Postdoctoral Researcher
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## Link: Game & Documents