Engineering Interactive Systems Embedding AI Technologies (3rd workshop on)

Barbara Rita Barricelli
Department of Information
Engineering
University of Brescia
Brescia, Italy
barbara.barricelli@unibs.it

José Creissac Campos
University of Minho & INESC TEC
Braga, Portugal
jose.campos@di.uminho.pt

Kris Luyten
Hasselt University - Flanders Make -
Expertise Center for Digital Media
Diepenbeek, Belgium
kris.luyten@uhasselt.be

Sven Mayer
LMU Munich
Munich, Germany
info@sven-mayer.com

Philippe Palanque
ICS-IRIT, Université Paul Sabatier –
Toulouse III
Toulouse, France
philippe.palanque@irit.fr

Emanuele Panizzi
Sapienza University of Rome
Rome, Italy
panizzi@di.uniroma1.it

Lucio Davide Spano
Dept. of Mathematics and Computer
Science, University of Cagliari
Cagliari, Italy

Simone Stumpf
School of Computing Science
University of Glasgow
Glasgow, United Kingdom
Simone.Stumpf@glasgow.ac.uk

Abstract

This workshop proposal is the third edition of a workshop which has been organised at EICS 2023 and EICS 2024. This edition aims to bring together researchers and practitioners interested in the engineering of interactive systems *that embed AI technologies* (as for instance, AI-based recommender systems) or that *use AI during the engineering lifecycle*. The overall objective is to identify (from experience reported by participants) methods, techniques, and tools to support the use and inclusion of AI technologies throughout the engineering lifecycle for interactive systems. A specific focus is on guaranteeing that user-relevant properties such as usability and user experience are accounted for. Contributions are also expected to address system-related properties, including resilience, dependability, reliability, or performance. Another focus is on the identification and definition of software architectures supporting this integration.

CCS Concepts

• **Human-centered computing** → **Human computer interaction (HCI)**; *HCI theory, concepts and models*; • **Software and its engineering** → **Software creation and management**; *Software development techniques*; • **Computing methodologies** → **Artificial intelligence**.

Keywords

Interactive Systems Engineering, Usability, Reliability, UX, AI technologies

1 Introduction and Context

Automation is pervasive in interactive systems [22]. While automation varies in nature and objectives, it is present in every layer of interactive systems architectures, from hardware input device driver level (e.g., mouse acceleration [4]), to interaction technique level (e.g., multimodal fusion such as finger clustering [19] or more sophisticated ones such as the bubble cursor [13] integrating in a single design automation at both input and output levels) as well as at the interactive application level (e.g., auto-completion [12], or the automatic generation of visual or textual components).

AI technologies enable complex tasks to be performed, and often target increased system autonomy, e.g., self-driving cars, autonomous cooking chefs [21]. However, having more automation might induce more potential for failures (known as the lumberjack analogy). Moreover, many AI technologies bring issues at the operation level due to their black-box nature, i.e., when users interact with an interactive application embedding them [2]. To address this issue, Explainable AI has been suggested to open up black-box AI systems [14].

Generative AI, for example, can generate various types of data (images, text, layout, persona's,…) driven by models that are trained with specific training data. Generative AI is best known for its capability to generate text and images. Still, it is also becoming more common as a supporting tool during the engineering life cycle for building interactive systems. Researchers have started exploring the use of Large Language Models for various aspects of the Human-Centred Development Process [27]. So far Generative AI has been used to support data-driven designs and generating prototypes [8, 16, 28], human-robot interaction [30], integrating multi-modal interaction techniques [31], and even feedback on User Interface designs [10] and usage within a broader social context [25].

Integrating AI technologies can be performed at various levels, from micro to macro, requiring different (and maybe conflicting) engineering approaches. Thus, at the engineering level, different issues appear depending on the type of AI-related technologies used and the type of interactions provided to the users of such systems. Indeed, beyond explanations, issues related to display/visualization [17] and control/command [18] arise. At the dependability level, even though multiple iterations have been performed, reliability remains very low (at about 80% accuracy for simple datasets) but much lower in some domains, such as food allergies, which might be considered critical in case of severe pathology [26].

Despite the many challenges AI technologies bring in interactive systems, the potential for effortless and seamless interaction with systems far outweighs the cost of designing usable systems. With this workshop, we aim to offer a platform for scientists interested in the design, development, evaluation, and use of interactive systems involving AI technologies to address these engineering challenges. This platform offered idea exchange, discussions, and collaborations and, thus, drive the development of AI-powered interactive systems in an interdisciplinary manner.

2 Workshop Objectives

The objectives of this workshop expand on the ones organized at ACM EICS 2023 and EICS 2024 [9].

The **first objective** is to identify and gather information about knowledge and practice in the workshop's domain:

- Get an overview of current R&D practices (methods/ notations/ tools) to engineer usable interactive systems embedding AI technologies, as well as lessons learned and recommendations.
- Get an overview of current R&D practices (methods/ notations/ tools) to architect usable interactive systems embedding AI technologies, as well as lessons learned and recommendations.
- Identify a systematic approach for describing AI technologies and assessing their impact on properties such as users' UX and systems' usability.
- Understand how the multiple stakeholders involved in interactive systems design and development identify properties, how they describe them, and how they assess their relative importance when they embed AI technologies (going beyond the classical UX and usability but also addressing, e.g., performance, dependability, safety).

- Identify an engineering approach to find an equilibrium between (AI-based) automation and human interaction.
- Gather approaches for engineering human-centered interactive AI systems along the design and development lifecycle, e.g. testing and assurance.

The **second objective** is to elicit the main gaps in AI technologies that hinder their exploitation in the design and development of interactive systems, as well as their embedding, especially if a user-centered design process is followed.

The **third objective** proposes to focus on the specific issue of engineering human-centred interactive AI systems. User interaction with AI technologies can occur at very different levels, ranging from perception-based techniques for input recognition to application-level tasks such as recommending and decision support. Conversational techniques are also gaining ground as components of interactive systems such as e-commerce websites or data analytics applications [15]. Engineering interaction-driven AI includes, among others, the design of suitable user interfaces [18], the integration of AI components with other interactive parts of the system, or the engineering of prompts for the application of large foundation models. The workshop aims to identify engineering methods to make the interaction with AI components transparent, controllable, explainable, and predictable.

The **fourth objective** focuses on the design and use of AI technologies in methods, processes, and tools for building interactive systems in all stages of the engineering lifecycle. Generative AI such as LLMs are used to generate code, AI can be used for automatic training and validation of interactive systems, and design and prototyping of user interfaces and interaction techniques are driven by pre-trained models that generate "creative" solutions. In the near future, AI tools could gain the potential to create and integrate AI components in interactive systems too.

The activities carried out during the workshop aim to identify the current state of knowledge in the scope of the workshop but also to outline a research agenda by bringing together diverse and sometimes competing views from multiple stakeholders.

3 Target Audience

The target audience is researchers and practitioners interested in using designing or developing AI technologies for engineering interactive systems or embedding them into interactive systems. The workshop is open to everyone who is interested in the topic and who wants to participate in the discussion or thinks about starting to work in the area.

4 Format, Structure and Duration of the Workshop

4.1 Duration

The workshop will last one full day, including presentations from participants, interactive sessions, and the preparation of a joint summary to be presented during the conference (if the conference organisers ask for it).

4.2 Short Presentations

Participants with an accepted submission presented a summary of their contribution, highlighting the relationship with the main topics of the workshop. The presentation should highlight explicitly: the application domain and its specificities, the AI technologies deployed (and their objective), the user interface and the interactions, the users' goals and tasks, and the engineering issues related to the integration of these AI technologies in the interactive system. Other aspects relevant to the workshop may also be presented, such as lessons learned, both negative and positive, about the tools and methods used during the engineering process.

4.3 Interactive Session and Panel

The afternoon featured a panel discussion with the overall goal of discussing re-occurring problems and challenges, drawbacks, and benefits of integrating (or deciding not to) AI technologies. As basic material for the discussion, the workshop moderator took notes during the presentations and structured these into categories. Furthermore, in the call for participation, we asked all authors to indicate possible topics for the panel discussion specifically. Three to four persons (including some workshop organizers) have set up the panel. In the first round, each panelist had the chance to give a concise introduction followed by a short first statement on the points for discussion. Subsequently, a moderated discussion of the points identified happened, including questions and contributions by the audience. We planed to open the panel to other interested workshop participants who are thus not required to submit a position paper but would be interested in the workshop topics.

4.4 Break down into Smaller Groups

To foster interaction between workshop participants and to produce diverse outcomes, the second part of the afternoon was dedicated to working in groups with topics to be selected from the panel topics.

5 Advertising Plans

The workshop will be advertised through the workshop web page (https://sites.google.com/view/eis-emb-aitech), while the submission and review process will handled by easychair (https://easychair. org/my/conference?conf=eiseait2025). The web page presents the timeline for submission, reviewing, and camera-ready deadline, such that all submissions are available to workshop attendees. Beyond this, workshop attendees will be offered the opportunity to revise and extend their submission, which were, after another round of reviews, included in the post-workshop proceedings to be published by Springer in the LNCS series.

6 Pre-workshop and Post-workshop Plans

The workshop will have three phases: first, submission of position papers of 2-10 pages before the workshop, which the workshop committee peer-reviewed, and second, the full-day workshop along EICS, including the presentation of the accepted papers and the panel discussion presented above. The accepted authors (at least one) are required to attend the workshop to present their position papers. Participants who also attend the conference will be offered the opportunity to co-create and co-present a summarizing poster presented during the EICS 2025 conference.

7 Organizers

The workshop will be run by experienced researchers in the area of Engineering Interactive systems. The organizers are members of the IFIP Working group on User Interface Engineering (IFIP WG 2.7/13.4) and members of the IFIP working group on Human-Centered Intelligent Interactive Systems (IFIP WG 13.11/12.14). The workshop is thus organised under the auspices of both working groups.

Barbara Rita Barricelli is an Associate Professor at the Department of Information Engineering of Università degli Studi di Brescia (Italy). Her research interests include Human-Computer Interaction, Human Work Interaction Design, Socio-technical Design, End-User Development, Usability, and UX. She has a particular focus on the interaction design for digital twins. She serves as Vice-Chair of IFIP Working Groups 13.11/12.14 on Human-Centered Intelligent Systems and 13.6 on Human Work Interaction Design.

José Creissac Campos is an Associate Professor in the Department of Informatics at the University of Minho (Portugal) and a research coordinator at INESC TEC's High-Assurance Software Laboratory (HASLab). He is a member of IFIP WG 2.7/13.4 on User Interface Engineering, which he chaired from 2016 to 2022, as well as WG 13.11/12.14 on Human-Centered Intelligent Systems. He has been regularly involved in ACM SIGCHI EICS, serving in various roles, including chairing the steering committee from 2020 to 2024, and has contributed to several other conference series over the years, such as INTERACT and IUI. His research sits at the intersection of Software Engineering and Human-Computer Interaction, with a strong focus on formal verification. Currently, his work explores how generative models can support the design and understanding of complex, safety-critical interactive systems.

Kris Luyten is a full professor in Computer Science at Hasselt University, and deputy managing director of the research center Expertise Center for Digital Media – a Flanders Make core lab. He is a Principal Investigator for the Flanders AI Research Program. His research explores how to improve intelligibility for intelligent software systems, striving to simplify the interaction between humans and technology. Kris has contributed to the HCI field by investigating how intelligibility features can be integrated into, a.o., automation [7] and AI-driven applications [6, 29], aiming to enhance user awareness and control over system behaviors.

Sven Mayer is an assistant professor of computer science at LMU Munich, Germany. His research sits at the intersection between Human-Computer Interaction and Artificial Intelligence, where he focuses on the next generation of computing systems. He uses artificial intelligence to design, build, and evaluate future human-centered interfaces. In particular, he envisions enabling humans to outperform their performance in collaboration with the machine. He focuses on areas such as augmented and virtual reality, mobile scenarios, and robotics. He has served as a program committee member at numerous conferences, e.g., ACM CHI, and in various organizing committees, e.g., as General Chair for the International Conference on Hybrid Human-Artificial Intelligence (HHAI'23).

Philippe Palanque is a professor of computer science at the University of Toulouse, France. Since the late 80s, he has been working on the development and application of formal description techniques for interactive systems. For more than 20 years, he has been

working on automation and its integration in interactive systems [11] for multiple domains [20] identifying rules and objectives for automation [23]. For instance, he was involved in the research network HALA! (Higher Automation Levels in Aviation) funded by SESAR programme which targeted at building the future European air traffic management system. The main driver of Philippe's research over the last 20 years [3] has been to address in an even way Usability, Safety and Dependability [24] in order to build trustable safety critical interactive systems. As for conferences, he is a member of the program committee of conferences in these domains such as SAFECOMP 2024 (43rd Conference on Computer Safety, Reliability and Security) and EICS 2024 (16th annual conference on Engineering Interactive Computing Systems).

Emanuele Panizzi is an associate professor of computer science at Sapienza University of Rome, Italy. He directs a research team focusing on human-computer interaction, app design, gamification, and context-aware mobile interaction. In the two areas of smart parking and earthquake detection, his current study uses AI to recognize users' behavior and context. Designing mobile user interfaces with implicit interaction and crowdsensing applications is the experimental component of this study. He served as the conference's program chair for Advanced Visual Interfaces AVI2022. He is currently serving as Associate Chair for ACM AutomotiveUI '23. He teaches HCI and software architecture. He has served as a consultant for major national and international corporations.

Lucio Davide Spano is an Associate Professor at the Univerity of Cagliari since 2019. He is chair of the IFIP 2.7/13.4 WG on User Interface Engineering since June 2022 and Delegate for the Research of the Extended Committee of SIGCHI-Italy. He has been a member of the Model-Based User Interface WG of the World Wide Web Consortium (W3C). He has been Programme Co-Chair for ACM Intelligent User Interfaces in 2020, and an associate editor for a special issue in ACM Transactions on Intelligent Interactive Systems. He is a member of the Senior Programme Committee of high-level international conferences in Human-Computer Interaction (e.g., IUI, INTERACT, EICS, NordiCHI). He is currently investigating the relationship between the logic reasoning style (inductive, abductive, deductive) in eXplainable AI (XAI) interfaces. He published results considering image, text [1] and temporal series [5] data types.

Simone Stumpf is Professor of Responsible and Interactive AI in the School of Computing Science at the University of Glasgow, Scotland. She has a long-standing research focus on user interactions with AI systems. Her research includes self-management systems for people living with long-term conditions, developing teachable object recognisers for people who are blind or have low vision, and investigating AI fairness. Her work has contributed to shaping Explainable AI (XAI) through the Explanatory Debugging approach for interactive machine learning, providing design principles for enabling better human-computer interaction and investigating the effects of greater transparency. The prime aim of her work is to empower all users to use AI systems effectively. She serves as Secretary of IFIP Working Groups 13.11/12.14 on Human-Centered Intelligent Systems.

References

[1] Amina Adadi and Mohammed Berrada. 2018. Peeking Inside the Black-Box: A Survey on Explainable Artificial Intelligence (XAI). *IEEE Access* 6 (2018), 52138–52160. https://doi.org/10.1109/ACCESS.2018.2870052

[2] E. Bassetti, A. Luciani, and E. Panizzi. 2021. ML Classification of Car Parking with Implicit Interaction on the Driver's Smartphone. In *Human-Computer Interaction−INTERACT 2021: 18th IFIP TC 13 International Conference, Bari, Italy, August 30–September 3, 2021, Proceedings, Part III*, Vol. 18. Springer International Publishing, 291–299. https://doi.org/10.1007/978-3-030-85613-7_21

[3] R. Bernhaupt, M. Cronel, F. Manciet, C. Martinie, and P. Palanque. 2015. Transparent Automation for Assessing and Designing better Interactions between Operators and Partly-Autonomous Interactive Systems. In *Proceedings of the 5th International Conference on Application and Theory of Automation in Command and Control Systems* (Toulouse, France) *(ATACCS '15)*. Association for Computing Machinery, New York, NY, USA, 129–139. https://doi.org/10.1145/2899361.2899375

[4] Géry Casiez and Nicolas Roussel. 2011. No more bricolage! methods and tools to characterize, replicate and compare pointing transfer functions. In *Proceedings of the 24th Annual ACM Symposium on User Interface Software and Technology* (Santa Barbara, California, USA) *(UIST '11)*. Association for Computing Machinery, New York, NY, USA, 603–614. https://doi.org/10.1145/2047196.2047276

[5] Federico Maria Cau, Hanna Hauptmann, Lucio Davide Spano, and Nava Tintarev. 2023. Effects of AI and Logic-Style Explanations on Users' Decisions Under Different Levels of Uncertainty. *ACM Trans. Interact. Intell. Syst.* 13, 4, Article 22 (dec 2023), 42 pages. https://doi.org/10.1145/3588320

[6] Sven Coppers, Jan Van den Bergh, Kris Luyten, Karin Coninx, Iulianna van der Lek-Ciudin, Tom Vanallemeersch, and Vincent Vandeghinste. 2018. Intellingo: An Intelligible Translation Environment. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, New York, NY, USA, 1–13. https://doi.org/10.1145/3173574.3174098

[7] Sven Coppers, Davy Vanacken, and Kris Luyten. 2022. FortClash: Predicting and Mediating Unintended Behavior in Home Automation. *Proc. ACM Hum.-Comput. Interact.* 6, EICS (2022), 1–20. https://doi.org/10.1145/3532204

[8] Biplab Deka, Zifeng Huang, Chad Franzen, Joshua Hibschman, Daniel Afergan, Yang Li, Jeffrey Nichols, and Ranjitha Kumar. 2017. Rico: A Mobile App Dataset for Building Data-Driven Design Applications. In *Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology* (Québec City, QC, Canada) *(UIST '17)*. Association for Computing Machinery, New York, NY, USA, 845–854. https://doi.org/10.1145/3126594.3126651

[9] Alan Dix, Sven Mayer, Philippe Palanque, Emanuele Panizzi, and Lucio Davide Spano. 2023. Engineering Interactive Systems Embedding AI Technologies. In *Companion Proceedings of the 2023 ACM SIGCHI Symposium on Engineering Interactive Computing Systems* (, Swansea, United Kingdom,) *(EICS '23 Companion)*. Association for Computing Machinery, New York, NY, USA, 90–92. https://doi.org/10.1145/3596454.3597195

[10] Peitong Duan, Jeremy Warner, and Bjoern Hartmann. 2023. Towards Generating UI Design Feedback with LLMs. In *Adjunct Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology (UIST '23 Adjunct)*. Association for Computing Machinery, New York, NY, USA, Article 70, 3 pages. https://doi.org/10.1145/3586182.3615810

[11] C. Fayollas, C. Martinie, P. Palanque, Y. Deleris, J.-C. Fabre, and D. Navarre. 2014. An Approach for Assessing the Impact of Dependability on Usability: Application to Interactive Cockpits. In *2014 Tenth European Dependable Computing Conference*. 198–209. https://doi.org/10.1109/EDCC.2014.17

[12] Robert Garfinkel, Elena Fernandez, and Ram Gopal. 2003. Design of an interactive spell checker: optimizing the list of offered words. *Decision Support Systems* 35, 3 (2003), 385–397. https://doi.org/10.1016/S0167-9236(02)00115-X

[13] Tovi Grossman and Ravin Balakrishnan. 2005. The bubble cursor: enhancing target acquisition by dynamic resizing of the cursor's activation area. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Portland, Oregon, USA) *(CHI '05)*. Association for Computing Machinery, New York, NY, USA, 281–290. https://doi.org/10.1145/1054972.1055012

[14] David Gunning, Mark Stefik, Jaesik Choi, Timothy Miller, Simone Stumpf, and Guang-Zhong Yang. 2019. XAI—Explainable artificial intelligence. *Science Robotics* 4, 37 (2019), eaay7120. https://doi.org/10.1126/scirobotics.aay7120 arXiv:https://www.science.org/doi/pdf/10.1126/scirobotics.aay7120

[15] D. C. Hernandez-Bocanegra and J. Ziegler. 2023. Explaining Recommendations through Conversations: Dialog Model and the Effects of Interface Type and Degree of Interactivity. *ACM Transactions on Interactive Intelligent Systems* 13, 2 (2023), 6:1–6:47. https://doi.org/10.1145/3579541

[16] Ranjitha Kumar, Arvind Satyanarayan, Cesar Torres, Maxine Lim, Salman Ahmad, Scott R. Klemmer, and Jerry O. Talton. 2013. Webzeitgeist: design mining the web. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Paris, France) *(CHI '13)*. Association for Computing Machinery, New York, NY, USA, 3083–3092. https://doi.org/10.1145/2470654.2466420

[17] Johannes Kunkel, Tim Donkers, Lisa Michael, Catalin-Mihai Barbu, and Jürgen Ziegler. 2019. Let Me Explain: Impact of Personal and Impersonal Explanations on Trust in Recommender Systems. In *Proceedings of the 2019 CHI Conference*

on Human Factors in Computing Systems (CHI '19). Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3290605.3300717

[18] Johannes Kunkel, Benedikt Loepp, and Jürgen Ziegler. 2017. A 3D Item Space Visualization for Presenting and Manipulating User Preferences in Collaborative Filtering. In *Proceedings of the 22nd International Conference on Intelligent User Interfaces (IUI '17)*. Association for Computing Machinery, New York, NY, USA, 3–15. https://doi.org/10.1145/3025171.3025189

[19] Hao Lü and Yang Li. 2013. Gesture studio: authoring multi-touch interactions through demonstration and declaration. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Paris, France) *(CHI '13)*. Association for Computing Machinery, New York, NY, USA, 257–266. https://doi.org/10.1145/2470654.2470690

[20] Alexander Meschtscherjakov, Manfred Tscheligi, Bastian Pfleging, Shadan Sadeghian Borojeni, Wendy Ju, Philippe Palanque, Andreas Riener, Bilge Mutlu, and Andrew L. Kun. 2018. Interacting with Autonomous Vehicles: Learning from other Domains. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems* (<conf-loc>, <city>Montreal QC</city>, <country>Canada</country>, </conf-loc>) *(CHI EA '18)*. Association for Computing Machinery, New York, NY, USA, 1–8. https://doi.org/10.1145/3170427.3170614

[21] Carl Oechsner, Sven Mayer, and Andreas Butz. 2022. Challenges and Opportunities of Cooperative Robots as Cooking Appliances. Proceedings of the 2022 Workshop on Engaging with Automation. https://ceur-ws.org/Vol-3154/paper14.pdf.

[22] Philippe Palanque. 2020. Ten Objectives and Ten Rules for Designing Automations in Interaction Techniques, User Interfaces and Interactive Systems. In *Proceedings of the International Conference on Advanced Visual Interfaces* (Salerno, Italy) *(AVI '20)*. Association for Computing Machinery, New York, NY, USA, Article 2, 10 pages. https://doi.org/10.1145/3399715.3400872

[23] Philippe Palanque. 2020. Ten Objectives and Ten Rules for Designing Automations in Interaction Techniques, User Interfaces and Interactive Systems. In *AVI '20: International Conference on Advanced Visual Interfaces, Island of Ischia, Italy, September 28 - October 2, 2020*, Genny Tortora, Giuliana Vitiello, and Marco Winckler (Eds.). ACM, 2:1–2:10. https://doi.org/10.1145/3399715.3400872

[24] Philippe Palanque, Sandra Basnyat, Regina Bernhaupt, Ronald Boring, Chris Johnson, and Peter Johnson. 2007. Beyond usability for safety critical systems: how to be sure (safe, usable, reliable, and evolvable)?. In *CHI '07 Extended Abstracts on Human Factors in Computing Systems* (San Jose, CA, USA) *(CHI EA '07)*. Association for Computing Machinery, New York, NY, USA, 2133–2136. https://doi.org/10.1145/1240866.1240966

[25] Joon Sung Park, Lindsay Popowski, Carrie Cai, Meredith Ringel Morris, Percy Liang, and Michael S. Bernstein. 2022. Social Simulacra: Creating Populated Prototypes for Social Computing Systems. In *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology* (Bend, OR, USA) *(UIST '22)*. Association for Computing Machinery, New York, NY, USA, Article 74, 18 pages. https://doi.org/10.1145/3526113.3545616

[26] Elisa Ramil Brick, Vanesa Caballero Alonso, Conor O'Brien, Sheron Tong, Emilie Tavernier, Amit Parekh, Angus Addlesee, and Oliver Lemon. 2021. Am I Allergic to This? Assisting Sight Impaired People in the Kitchen. In *Proceedings of the 2021 International Conference on Multimodal Interaction* (Montréal, QC, Canada) *(ICMI '21)*. Association for Computing Machinery, New York, NY, USA, 92–102. https://doi.org/10.1145/3462244.3481000

[27] Albrecht Schmidt, Passant Elagroudy, Fiona Draxler, Frauke Kreuter, and Robin Welsch. 2024. Simulating the Human in HCD with ChatGPT: Redesigning Interaction Design with AI. *Interactions* 31, 1 (jan 2024), 24–31. https://doi.org/10.1145/3637436

[28] Jerry Talton, Lingfeng Yang, Ranjitha Kumar, Maxine Lim, Noah Goodman, and Radomír Měch. 2012. Learning design patterns with bayesian grammar induction. In *Proceedings of the 25th Annual ACM Symposium on User Interface Software and Technology* (Cambridge, Massachusetts, USA) *(UIST '12)*. Association for Computing Machinery, New York, NY, USA, 63–74. https://doi.org/10.1145/2380116.2380127

[29] Bram van Deurzen, Herman Bruyninckx, and Kris Luyten. 2022. Choreobot: A Reference Framework and Online Visual Dashboard for Supporting the Design of Intelligible Robotic Systems. *Proc. ACM Hum.-Comput. Interact.* 6, EICS (2022), 1–24. https://doi.org/10.1145/3532201

[30] Chao Wang, Stephan Hasler, Daniel Tanneberg, Felix Ocker, Frank Joublin, Antonello Ceravola, Joerg Deigmoeller, and Michael Gienger. 2024. Large Language Models for Multi-Modal Human-Robot Interaction. arXiv:2401.15174 [cs.RO]

[31] Jackie Junrui Yang, Yingtian Shi, Yuhan Zhang, Karina Li, Daniel Wan Rosli, Anisha Jain, Shuning Zhang, Tianshi Li, James A. Landay, and Monica S. Lam. 2024. ReactGenie: A Development Framework for Complex Multimodal Interactions Using Large Language Models. arXiv:2306.09649 [cs.HC]