What does Generative UI mean for HCI Practice?

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Abstract

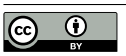
The increasing capability of AI models to generate user interfaces has the potential to transform HCI and design practice. We invite researchers, designers, developers, and practitioners to explore how generative UI – interfaces created by AI models – will reshape design methods, workflows, and user experiences. Our goals are to (i) envision how generative UI can underpin innovative human-centric experiences, and (ii) reflect on how HCI and design practice could and should evolve to meet the opportunities and challenges this presents. This will be an interactive and discussion-oriented workshop, featuring a pop-up panel, creative ideation exercises, and collaborative artefact development. Artefacts produced through the workshop will be shared online afterwards and will, we hope, result in an Interactions or CACM article. We will welcome submissions from scholars and practitioners working on dynamic or generative UI, as well as those with expertise in related areas. To keep participation broad, participants will be asked to submit a two-page position paper (in ACM single column format), a two-page pictorial, or a two-minute video at the workshop website. We expect approximately 35 participants to register and attend, including the organizers.

CCS Concepts

• **Human-Centered Computing** → Human-Computer Interaction.

Keywords

dynamic UI, adaptive UI, malleable software, design practice, activity-centric computing, end-user programming, human-AI interaction



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1 Motivation

Artificial Intelligence (AI) models are demonstrating a growing capacity to generate user interfaces (UIs), while also being endowed with greater flexibility and control to do this in real time for end-users. This allows interfaces to be created and adjusted dynamically by AI models at point of use, with the potential to support context-specific and personalized user experiences. This development presents considerable opportunities but also significant implications for HCI practice, as it suggests a trajectory where AI systems design and deliver UI directly to users. In contrast, HCI has built its foundation on developing tools and methods to support the crafting of interfaces by people. Practitioners seek to understand the needs and values of intended users, engaging in processes of ideation, testing, and iterative prototyping. They participate in teams that build their ideas into features or products, in the context of relatively stable software ecosystems. They evaluate those features or products and use that to inform further design. The technologies that derive from this process are generally consistent and predictable (indeed, these are core values within HCI), and people are involved in their production at every step of the way.

In this workshop we will explore how HCI practice could and should change as AI models become increasingly capable of generating UI. Arguably, this growing capability will introduce a radical shift in the design roles we in the HCI community play, including the methods we use to influence the development of interactive systems. We ask: How will we, as HCI scholars and practitioners, continue to shape interactive experiences in ways that are human-centric? And, how will the workflows that produce technologies

shift to incorporate UI generated by AI? In particular, if UI is generated and delivered directly to users by AI models, many of the traditional approaches HCI has adopted to ensure good design may need to be rethought. Processes of ideation, testing, and iteration may need to focus on what an AI model will generate at run-time, rather than on what a stable design that is to be 'shipped' should be. These new processes may need to complement broader changes to technology production workflows, which could become increasingly 'model-centric'. Evaluation too may need to center AI models, focusing on the identification of metrics that support their development so that interactions between them and their users improve. We suggest that this calls for a need to both (i) understand what innovative AI-enabled experiences that meet users' needs and values could be as models become more capable of generating UI, and (ii) reflect on and evolve our own practice.

This workshop sets out to address these needs by providing a working space for design, discussion, and the production of artefacts, which will ground the building and sharing of knowledge. Attendees will include researchers, practitioners, designers, and developers. We will build on existing HCI knowledge as well as providing space for imagining future possibilities. We will envision how UI that is generated by AI models at run-time can change the user experience, and will consider how to conduct human-centric research and practice in a model-centric ecosystem.

We begin this proposal by describing relevant work and proposing some working definitions[1] that will ground questions for the HCI community. We then link this to the workshop's goals and explain how the activities we plan will address them.

1.1 Dynamic UI

While UI generated by AI models garners attention, HCI already has a body of knowledge that explores 'dynamic UI', interfaces that are rendered to suit a user's specific needs or to fit their context. Here, adjustments to the user interface can either be driven by the system (for this we use the term 'adaptive UI') or controlled by the user (as in 'malleable software').

Adaptive UIs, which are tailored by the system for the user, their context, and/or their activity, have been explored in domains such as adaptive hypermedia, context-aware mobile apps, and intelligent tutoring systems. Early examples include SUPPLE and SUPPLE++, which optimized the interface for device constraints and users' capabilities [16, 17, 18], PUC [31], a 'Portable Universal Controller' that supported consistency across different appliances, UNIFORM [32], which produced remote control interfaces by drawing on users' previous experiences, and HUDDLE [33], which generated task-based interfaces across multiple appliances. In mixed reality, research has explored how to create interfaces that take into account user preferences [38], cognitive load, task, and environment [27], and environmental and social cues [26]. More recently, bio-physical signals have been leveraged to adapt UI, with the aim of supporting emotional wellbeing [24] and reducing cognitive load [1, 14, 15, 21].

Malleable software supports user-led customization at point of use. More specifically, Litt *et al.* [28] describe this as a software ecosystem where anyone can adapt their tools to their needs with minimal friction, giving users agency as co-creators. Examples include Bespoke [44], which enables users to generate GUIs to suit their own complex workflows, NL2INTERFACE [8], which allows users to generate a multi-visualization interface for data analysis, and LIDA [11], which supports the authoring of data visualizations and infographics. In DynaVis [43] dynamic widgets are generated and can be edited through natural language.

There are lessons to be learnt from dynamic UI for the generation of UI by AI models. By personalizing content and workflow, dynamic UI can reduce cognitive load and cater for diverse needs. However, it can also introduce complexity, reduce predictability, require the collection of potentially sensitive data, and create challenges for users' awareness of, and control over, possibilities for interaction. Additionally, its development can be methodologically complex. Machine learning (ML) technologies are increasingly being used in the design of dynamic UI (e.g. [42]), including to support the generation of new UI variations [45], to plan sequences of adaptations to the interface [41], and to ground adaptation decisions in specific contexts [19]. These methods point to the potential to use ML to underpin not only the generation of UI, but also the progression of multiple UIs in support of an activity, and the tailoring of those UIs to fit changing contexts.

1.2 Generative UI

The previous section highlights some of the lessons the HCI community can learn from dynamic UI when developing generative UI. However, generative UI has implications for HCI practice that go beyond the creation of dynamic interfaces. This was recently highlighted at DIS 2025, where two papers [7, 25] illustrated how UI generated by AI models is beginning to alter the ways in design work is accomplished. For the purposes of this proposal, we use the term 'generative UI', or 'genUI' to describe any interface that is created by an AI model, whether this occurs as part of the design process, or at point of use as part of human-AI interaction. These two scenarios have different sets of implications for HCI. GenUI that supports "design-time collaboration between human and machine agents" (p. 489 [25]) augments design, while the need to design for genUI that is produced as functional code at point of use has the potential to more radically reshape HCI practice. Below, we describe these two sets of implications in more depth.

Firstly, the possibility to use AI-generated designs, ranging from suggested layouts and styles to fully generated interface components and code, can augment the creative process. Here, AI models are positioned as a tool to be used by, or as a 'partner' that 'collaborates with', human designers [25]. Recent tools such as Stitch [37], which produce functional GUI code or detailed interface descriptions from natural language prompts, demonstrate the potential for AI to accelerate design prototyping and impact software engineering. Workflows that draw on genUI as design material mix creation and curation (see also [40]), giving people the option to generate and refine AI-produced options. Lee identifies five themes that highlight the iterative and co-creative process of designing with genUI: *computational co-creation* in the context of human-AI partnership; *expanded design space exploration* through rapid production and iteration of ideas; *representation fluidity* as designs move between sketches, wireframes, visual designs, and functional

[1] We hope that, through the workshop, the community can arrive on a commonly agreed upon set of definitions around dynamic and generative UI.

code; *contextual adaptation* as outputs can be tailored to implicit design knowledge such as brand guidelines; and *design synthesis over selection* as AI can synthesize new designs rather than necessitating selection from previously-presented options. Chen *et al.* [7] studied how UX designers, UX researchers, software engineers, and product managers used a state-of-the-art genUI tool in their work, finding that all roles benefited from its incorporation into early-stage ideation, the creation of "first draft" prototypes, and the communication of visual material. Additionally, non-designers benefited from the democratization of UI creation. For instance, product managers used it to visualize product vision and features.

A second implication for the HCI community relates to the potential of AI models to render interfaces as part of human-AI interaction, i.e., AI generates UI directly for end-users at point of use. For instance, ephemeral interfaces [9] are dynamically generated by LLMs to be context-specific. UIs can be generated alongside chat to support the user's task [20], they can act as a 'turn' in the interaction to support a specific use-case, such as prompting [12, 34], or they can appear as scaffolds alongside other content, to support comprehension and exploration [9]. Finally, recent work shows the potential for genUI to also be malleable, supporting user-driven adjustments. For instance, in JELLY [6], LLMs generate task-driven data models from users' prompts, which guide the generation of the interface. The interface can then be modified and extended by the user, through natural language and direct manipulation. Thus, genUI that is partly or wholly generated at run-time can be: (i) tailored to the user and/or their context; (ii) adaptive over time, changing with their needs and situation; and/or (iii) malleable, enabling people to make adjustments. Taken together, this suggests the potential for AI models to play a role in creating, adapting, and evolving interfaces over time. This raises questions for HCI, including how to apply design heuristics and how to adhere to guidelines and policy. It also suggests a need to revisit what critical and creative engagement in the design process looks like, and how outcomes can be evaluated when interfaces are uniquely generated for each person.

1.3 Summary

A number of dimensions of dynamic and generative UI emerge from this overview of prior work, which could ground discussions of how genUI could impact HCI and design practice. These include:

1. *Is the generated UI for a designer/developer or for the end-user?* A key distinction for the HCI community lies between UI that is created to support the software design process, as reported by Lee [25] and Chen *et al.* [7], and UI that is produced in the general course of human-AI interaction. In the former, the designer/developer explicitly asks the model to produce UI, which feeds into a broader process whereby *generated UIs are refined by practitioners before being experienced by end-users.* Alternatively, AI can generate functional UIs directly at run-time, which are *interacted with by end-users as they are generated.* These point to the opportunity and need to alter HCI and design practice.
2. *Is the UI constant or does it change?* Prior work suggests variations ranging from static genUI (e.g. wireframes and visuals produced as part of the design process [25]); to interactive genUI (e.g., in dynamic prompt middleware [12, 34], genUI takes the form of interactive radio buttons that do not change once generated); to dynamic genUI, which can be changed by the user, or can change itself, during the interaction.
3. If the interface can change, *are changes user-driven and/or system-driven?* I.e., is the user in control of changes to the UI, as in the case of malleable software, does the UI adapt to the user and/or their context, or are both possible?
4. *How long is the interaction timeframe?* Is the generated UI produced to support an ephemeral interaction, where UI is generated and interacted with on the fly before the user moves on, or does it support a longer-lasting activity?

2 Questions for the HCI Community

In this workshop we will consider the implications of genUI for HCI design and practice. Our goals are twofold: (i) to explore and imagine what sorts of experiences genUI should underpin to meet people's needs and values; and (ii) to contemplate how HCI practice could and should change in order to support this.

In relation to (i) and as indicated in the previous section, genUI can enable ephemeral experiences in which a UI is experienced only once, it can underpin much longer interactions through which the UI can change, it can give greater control to users to make those changes, and it can use complex reasoning to support system-driven adaptations. The workshop will be a vehicle to ask: What sorts of experiences should genUI enable? How are those experiences related to existing HCI knowledge? And what challenges and research questions do these suggest? Critical and speculative design methods point to ways of envisioning what new user experiences could be [2, 13, 23]. Examples of existing relevant knowledge include that cited above, as well as related approaches including instrumental interaction [4, 35], dynamic abstractions [39], activity-centric computing [3], end-user programming [30], the use of design heuristics, guidelines, and patterns (e.g. [5]), and research into how to automatically transfer these [10] and make them malleable [29].

In relation to (ii), we aim to build a shared understanding of how genUI creates opportunities and challenges for HCI practice, how we can apply existing techniques to the design of genUI, and whether new techniques are needed. We will reflect upon:

- The inclusion of genUI in the design process. This tends to augment existing design approaches through the generation of interfaces that feed into a design process led by skilled designers [7, 25], and raises questions about the opportunities genUI presents for design and HCI practitioners.
- The democratization of UI generation, whereby the design and creation of UI is increasingly accessible to non-experts [7]. This ranges from people involved in software development, such as product managers, software engineers, and entrepreneurs, to end-users who could be increasingly capable of customizing and developing their own tools. This raises questions about how the software development process could be reimagined, and what roles HCI and design practitioners will play.
- The potential for increased malleability of software. Together with the above, this suggests the possibility of workflows

that deliver apps and tools intended to be customized by end-users, and raises questions about how HCI practice can ensure those customized experiences are valuable.
- Its capacity to be central to human-AI interaction, as AI models are given the flexibility to generate novel interactive UI at point of use. This raises questions about how HCI practice can inform UI generated directly by AI models, be this through the application of design patterns and guidelines, or through ML techniques. An example of the latter is WHAM [22], a World and Human Action Model developed to support creative practice in gameplay design.

To discuss these questions and address the workshop goals, we will encourage participation from diverse attendees, including researchers, practitioners, designers, and developers, those working on dynamic and genUI, and those with expertise in related areas.

3 Activities

The workshop will be organized across two sessions with a break.

3.1 Session 1: Discussion and Ideation to Build Shared Understanding

In Session 1, we aim to develop a shared understanding of how genUI may shape the future of interactions with technologies. We will begin with a short **welcome** (10 minutes) to outline the goals of the workshop and to draw out dimensions of dynamic and generative UI to center the discussion (drawing on Section 1.3).

Attendees will then participate in a **human spectrogram exercise** (15 minutes), which will serve as an icebreaker and encourage discussion. During this, we will ask all participants to show their agreement or disagreement with a set of provocations by physically organizing themselves in a line (from strongly agree to strongly disagree). Each provocation will be followed by a short open discussion.

This will be followed by a **pop-up panel** (30 minutes). Four pre-selected panelists will kick off this session. They will be asked to reflect on topics such as emerging capabilities of AI models in relation to genUI; scenarios for genUI; implications of genUI for HCI research; and implications of genUI for design practice. The 'pop-up' part of the panel (final 10 minutes) will enable initial panelists to swap in and out with other attendees, to broaden the discussion and engage the whole room. We will strive for a panel that is balanced across roles and demographics.

The session will close with a Crazy 8s **fast sketching exercise** (35 minutes), in which participants work in groups of five to produce eight sketches in eight minutes. The goal here is to get everyone in the room ideating on how genUI could change the future of interactions with technologies. Organizers will introduce the method (5 minutes), and participants will spend 8 minutes sketching and 10 minutes discussing as a group. During the remaining 12 minutes, each table will highlight one sketch to capture a key theme. Sketches will be displayed in the room during the break to foster discussion.

3.2 Session 2: Development of Artefacts to Build Knowledge and Support Dissemination

The aim of Session 2 is to build on the shared understanding and creativity developed in Session 1 to think more deeply about how HCI practice could and should evolve as AI models and systems become increasingly capable of generating UI. To achieve this aim, participants will work together in breakout groups to produce artefacts that build and externalize knowledge of what it means to evolve HCI practice. Artefacts will both frame discussion and be used to disseminate knowledge beyond the workshop. Options could include the following.

Option 1: Create a guide to using genUI as part of HCI research and practice. The possibility to use AI models to generate UI within the design process is already changing design practice, as reported by Lee [25] and Chen *et al.* [7], and this reflects broader changes in related fields, such as the emergence of 'vibe coding' in software engineering. How might HCI research and practice change further, and what will good practice look like?

Option 2: Envision new software development workflows and create a guide for HCI practitioners working within these. Software development could change in various ways, including increased reliance on AI to generate UIs at point of use, more emphasis on tools that can be customized by end-users, and altered roles for HCI and design practitioners due to the democratization of UI generation and coding. What will new roles for HCI practitioners look like, and how will these draw on existing knowledge?

Option 3: Create a guide to designing genUI that is experienced directly by end-users (i.e., as opposed to as part of the design cycle). This could include creating recommendations for ephemeral UI [9], which is contextually generated on the fly, and/or proposals for designing longer interactions with genUI, where the interface may adapt, or be changed by the user, over time. What theories, design principles, and/or methods should HCI research and practice draw on when designing for genUI?

Option 4: Envision the new engineering and technical stack for genUI, and consider how this could be designed to center user needs and values. Discussion points could include whether this requires a new design language, customizability, or if it is driven entirely by AI. For example, what are the pros and cons of different technical approaches, such as code-generation or pattern-based-generation? What are the building blocks of each layer of the stack? What are the approaches to operationalizing the building blocks and design approaches to encourage adoption? And what new methods can be applied, such as using reinforcement learning (cf. [41]) and finetuning to influence model outputs?

Option 5: Create a guide to educating the next generation of HCI researchers and practitioners. What methods and knowledge will be needed in a world where genUI shapes and underpins people's interactions with technology?

The breakout groups will be followed by a brief report back to close the session. Participants will be encouraged to record their conversations and use AI to generate transcripts to feed into the outputs that will be shared afterwards.

4 Organizers

We are a multidisciplinary team from industry and academia, with deep expertise including dynamic and generative UI, HCI and design practice, and the inclusion of AI capabilities in software. The organizers are as follows.

Siân Lindley co-leads the People-Centric AI Research Area at Microsoft Research Cambridge. The group focuses on establishing principles and approaches to guide human-AI interaction, particularly as models are given increased flexibility and control over the content and interfaces they generate. Siân's research includes understanding interactions between people and AI as situated and contextualized, with particular attention to how human-AI interaction can support collaborative work. Her academic background is in Psychology.

Jack Williams is a Principal Researcher at Microsoft Research Cambridge. Jack's research spans programming languages, human-computer interaction, and artificial intelligence, with a core focus on developing techniques that make computation more accessible and understandable to non-experts. In recent years, Jack's work has expanded to include generative AI, both as a new form of direct computation, as well as indirectly through AI code-generation. At Microsoft, Jack has worked extensively with the Excel team, incubating and releasing multiple product features from programming tools to AI capabilities.

Yining Cao is fifth year Ph.D. student in the Foundation Interface Lab at the University of California, San Diego. Her research focuses on how computational structures, as one of the fundamental components, can be generated, composed, and synchronized to support complex information activities, to create a responsive information that can evolve with users' dynamic and personal needs.

Haijun Xia is an Assistant Professor at the University of California, San Diego. He directs the Foundation Interface Lab. Haijun's research focuses on developing the foundational elements of human-computer interfaces to seamlessly bridge human cognition and digital computation and foster convivial human-AI collaboration. Concretely, he treats information and interfaces as malleable materials that humans and intelligent agents can flexibly manipulate – guided by users' goals, needs, and preferences as well as fundamental cognitive principles – to unlock new ways of thinking, working, and living. An exposition of this vision can be found in his recent talk on Generative, Malleable, Personal User Interfaces.

Elizabeth Churchill currently serves as a Professor and founding Department Chair of HCI at the Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) in Abu Dhabi, where her research focuses on the design of human-centered AI systems. She is an ACM Fellow who continues to contribute to industry practice and academia, having previously held senior roles at Google, Yahoo, and eBay.

Abigail Sellen has recently stepped back as Lab Director of Microsoft Research Cambridge in order to pursue a research agenda focused on some of the most important challenges AI is creating for society. She has been involved in the field of HCI since its inception, and sees generative AI as one of the most disruptive changes to both the theory and practice of HCI. She sees this workshop as a rare opportunity to engage with the broader community in all its diversity to reflect on what this means for the field going forward.

Jeffrey Nichols is a Research Scientist in the AI/ML group at Apple, where he works on intelligent user interfaces. His recent work focuses on UI understanding and automatic UI navigation. His doctoral research, Automatically Generating High-Quality User Interfaces for Appliances, was among the earliest explorations of generative user interfaces – a line of inquiry that is more relevant today than ever.

David Karger is a Professor at MIT CSAIL. His primary interest is in developing tools that help individuals manage information better. This involves studying people and current tools to understand where the problems are, creating and evaluating tools that address those problems, and deploying those tools to learn how people use them and iterate the whole process. He draws on whatever fields can help: information retrieval, machine learning, databases, and algorithms, but most often human-computer interaction.

5 Workshop Details

Publishing Plans: We will publish accepted papers as workshop proceedings via CEUR-WS. The workshop website will link to the proceedings and will also include artefacts produced during the workshop itself (see Section 3.2).

Accessibility: Workshop submissions must follow SIGCHI's Accessibility Guide for Authors [36]. We will assess participants' accessibility needs early and adapt activities like the human spectrogram (which requires mobility) and/or coordinate with the CHI Accessibility Chairs for additional support, where necessary.

Offline Materials: The workshop will be held in person only, as per CHI 2026 guidelines. The workshop website will share key information, including the call for proposals, accepted submissions, and post-workshop summaries and artefacts.

After the Workshop: Final artefacts will be shared on the workshop website following CHI 2026. We additionally intend to write a position paper for Interactions or CACM to reflect the discussions and insights generated.

6 Call for Participation

The increasing capability of AI models to generate user interfaces has the potential to transform HCI and design practice. We invite researchers, designers, developers, and practitioners to explore how genUI – interfaces created by AI models – will reshape design methods, workflows, and user experiences. Our goals are to (i) envision how genUI can underpin innovative human-centric experiences, and (ii) reflect on how HCI and design practice could and should evolve to meet the challenges this presents. This will be an interactive workshop, featuring a pop-up panel, creative ideation exercises, and collaborative artefact development, held over two 90-minute sessions. To participate, submit a two-page position paper (in ACM single column format, not including references), two-page pictorial, or two-minute video at the workshop website, outlining how you think genUI will enable new human-centric experiences, and how HCI and design practice will need to change to support this. Submissions must follow SIGCHI's Accessibility Guide for Authors and will be evaluated by their relevance and novelty. Accepted papers will be published in CEUR-WS. All accepted submissions will be included on the website, along with artefacts produced during the workshop itself. We will accept one author

per submission, who must register for and attend the workshop. We expect approximately 35 participants to register and attend, including the organizers. We hope to develop the outcomes of the workshop into an Interactions or CACM article.

References

[1] Mina Alipour, Mahyar Tourchi Moghaddam, Karthik Vaidhyanathan, and Mikkel Baun Kjærgaard. 2023. Toward Changing Users behavior with Emotion-based Adaptive Systems. In Proceedings of the 31st ACM Conference on User Modeling, Adaptation and Personalization (UMAP '23). Association for Computing Machinery, New York, NY, USA, 85–95. https://doi.org/10.1145/3565472.3595614

[2] James Auger. 2013. Speculative design: crafting the speculation. Digital Creativity, 24, 1, 11-35.

[3] Jakob E. Bardram, Steven Jeuris, Paolo Tell, Steven Houben, and Stephen Voida. 2019. Activity-centric computing systems. Commun. ACM 62, 8 (August 2019), 72–81. https://doi.org/10.1145/3325901

[4] Michel Beaudouin-Lafon. 2000. Instrumental interaction: an interaction model for designing post-WIMP user interfaces. In Proceedings of the SIGCHI conference on Human Factors in Computing Systems (CHI '00). Association for Computing Machinery, New York, NY, USA, 446–453. https://doi.org/10.1145/332040.332473

[5] Yining Cao, Yiyi Huang, Anh Truong, Hijung Valentina Shin, and Haijun Xia. 2025. Compositional Structures as Substrates for Human-AI Co-creation Environment: A Design Approach and A Case Study. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 188, 1–25. https://doi.org/10.1145/3706598.3713401

[6] Yining Cao, Peiling Jiang, and Haijun Xia. 2025. Generative and Malleable User Interfaces with Generative and Evolving Task-Driven Data Model. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 686, 1–20. https://doi.org/10.1145/3706598.3713285

[7] Xiang 'Anthony Chen, Tiffany Knearem, and Yang Li. 2025. The GenUI Study: Exploring the Design of Generative UI Tools to Support UX Practitioners and Beyond. In Proceedings of the 2025 ACM Designing Interactive Systems Conference (DIS '25). Association for Computing Machinery, New York, NY, USA, 1179–1196. https://doi.org/10.1145/3715336.3735780

[8] Yiru Chen, Ryan Li, Austin Mac, Tianbao Xie, Tao Yu, & Eugene Wu. 2022. NL2INTERFACE: Interactive Visualization Interface Generation from Natural Language Queries. IEEE Visualization Conference NLVIZ Workshop 2022. arXiv: 2209.08834v2

[9] Ruijia Cheng, Titus Barik, Alan Leung, Fred Hohman, & Jeffrey Nichols. 2024. BISCUIT: Scaffolding LLM-generated code with ephemeral UIs in computational notebooks. In *2024 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)* (pp. 13-23). IEEE.

[10] Niraj Ramesh Dayama, Simo Santala, Lukas Brückner, Kashyap Todi, Jingzhou Du, and Antti Oulasvirta. 2021. Interactive Layout Transfer. In Proceedings of the 26th International Conference on Intelligent User Interfaces (IUI '21). Association for Computing Machinery, New York, NY, USA, 70–80. https://doi.org/10.1145/3397481.3450652

[11] Victor Dibia. 2023. LIDA: A tool for automatic generation of grammar-agnostic visualizations and infographics using large language models. arXiv preprint arXiv:2303.02927.

[12] Ian Drosos, Jack Williams, Advait Sarkar, Nicholas Wilson, Sean Rintel, and Payod Panda. 2025. Dynamic Prompt Middleware: Contextual Prompt Refinement Controls for Comprehension Tasks. In Proceedings of the 4th Annual Symposium on Human-Computer Interaction for Work (CHIWORK '25). Association for Computing Machinery, New York, NY, USA, Article 24, 1–23. https://doi.org/10.1145/3729176.3729203

[13] Anthony Dunne and Fiona Raby. 2013. Speculative Everything: Design, Fiction and Social Dreaming. MIT Press.

[14] Anna Maria Feit, Lukas Vordemann, Seonwook Park, Caterina Berube, and Otmar Hilliges. 2020. Detecting Relevance during Decision-Making from Eye Movements for UI Adaptation. In ACM Symposium on Eye Tracking Research and Applications (ETRA '20 Full Papers). Association for Computing Machinery, New York, NY, USA, Article 10, 1–11. https://doi.org/10.1145/3379155.3391321

[15] Marc-Philipp Funk, Nassir Navab, and Laura Schütz. 2025. Eye Tracking-Based Adaptive User Interfaces in Virtual Reality Eye Surgery Training. In Proceedings of the Mensch und Computer 2025 (MuC '25). Association for Computing Machinery, New York, NY, USA, 578–582. https://doi.org/10.1145/3743049.3748551

[16] Krzysztof Gajos and Daniel S. Weld. 2004. SUPPLE: automatically generating user interfaces. In Proceedings of the 9th international conference on Intelligent user interfaces (IUI '04). Association for Computing Machinery, New York, NY, USA, 93–100. https://doi.org/10.1145/964442.964461

[17] Krzysztof Z. Gajos, Daniel S. Weld, and Jacob O. Wobbrock. 2010. Automatically generating personalized user interfaces with Supple. Artificial intelligence 174, 12-13 (2010), 910–950.

[18] Krzysztof Z. Gajos, Jacob O. Wobbrock, and Daniel S. Weld. 2007. Automatically generating user interfaces adapted to users' motor and vision capabilities. In Proceedings of the 20th Annual ACM Symposium on User Interface Software and Technology (Newport, Rhode Island, USA) (UIST '07). Association for Computing Machinery, New York, NY, USA, 231–240. doi:10.1145/1294211.1294253

[19] Daniel Gaspar-Figueiredo, Marta Fernández-Diego, Ruben Nuredini, Silvia Abrahao, and Emilio Insfran. 2024. Reinforcement Learning-Based Framework for the Intelligent Adaptation of User Interfaces. In Companion Proceedings of the 16th ACM SIGCHI Symposium on Engineering Interactive Computing Systems (EICS '24 Companion). Association for Computing Machinery, New York, NY, USA, 40–48. https://doi.org/10.1145/3660515.3661329

[20] Sean Grove. 2023. ConjureUI Demo. Retrieved September 29 2025, from: https://www.youtube.com/watch?v$=$xgi1YX6HQBw

[21] Christian Herdin, Christian Märtin, & Felix Schmidberger. 2024. Design and User Acceptance of Dynamic User Interface Adaptations Based on Situation-Awareness and Emotion-Recognition. In *International Conference on Human-Computer Interaction* (pp. 345-356). Cham: Springer Nature Switzerland.

[22] Kanervisto, A., Bignell, D., Wen, L.Y. *et al.* World and Human Action Models towards gameplay ideation. Nature 638, 656–663 (2025). https://doi.org/10.1038/s41586-025-08600-3

[23] Shamika Klassen and Casey Fiesler. 2022. "Run Wild a Little With Your Imagination": Ethical Speculation in Computing Education with Black Mirror. In Proceedings of the 53rd ACM Technical Symposium on Computer Science Education - Volume 1 (SIGCSE 2022), Vol. 1. Association for Computing Machinery, New York, NY, USA, 836–842. https://doi.org/10.1145/3478431.3499308

[24] Radha Kumaran, Viral Niraj Doshi, Sherry X Chen, Avinash Ajit Nargund, Tobias Höllerer, and Misha Sra. 2023. EChat: An Emotion-Aware Adaptive UI for a Messaging App. 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 36, 1–3. https://doi.org/10.1145/3586182.3616698

[25] Kyungho Lee. 2025. Towards a Working Definition of Designing Generative User Interfaces. Companion Publication of the 2025 ACM Designing Interactive Systems Conference. Association for Computing Machinery, New York, NY, USA, 489–495. https://doi.org/10.1145/3715668.3736365

[26] Zhipeng Li, Christoph Gebhardt, Yves Inglin, Nicolas Steck, Paul Streli, and Christian Holz. 2024. SituationAdapt: Contextual UI Optimization in Mixed Reality with Situation Awareness via LLM Reasoning. In Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (UIST '24). Association for Computing Machinery, New York, NY, USA, Article 43, 1–13. https://doi.org/10.1145/3654777.3676470

[27] David Lindlbauer, Anna Maria Feit, and Otmar Hilliges. 2019. Context-Aware Online Adaptation of Mixed Reality Interfaces. In Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology (UIST '19). Association for Computing Machinery, New York, NY, USA, 147–160. https://doi.org/10.1145/3332165.3347945

[28] Geoffrey Litt, Josh Horowitz, Peter van Hardenberg, and Todd Matthews. 2025. Malleable Software: Restoring User Agency in a World of Locked-Down Apps. Ink & Switch. https://www.inkandswitch.com/essay/malleable-software/

[29] Bryan Min, Allen Chen, Yining Cao, and Haijun Xia. 2025. Malleable Overview-Detail Interfaces. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 688, 1–25. https://doi.org/10.1145/3706598.3714164

[30] Bonnie A Nardi. 1993. A small matter of programming: perspectives on end user computing. MIT press.

[31] Jeffrey Nichols, Brad A. Myers, Michael Higgins, Joseph Hughes, Thomas K. Harris, Roni Rosenfeld, and Kevin Litwack. 2003. Personal universal controllers: controlling complex appliances with GUIs and speech. In CHI '03 Extended Abstracts on Human Factors in Computing Systems (CHI EA '03). Association for Computing Machinery, New York, NY, USA, 624–625. https://doi.org/10.1145/765891.765896

[32] Jeffrey Nichols, Brad A. Myers, and Brandon Rothrock. 2006. UNIFORM: automatically generating consistent remote control user interfaces. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '06). Association for Computing Machinery, New York, NY, USA, 611–620. https://doi.org/10.1145/1124772.1124865

[33] Jeffrey Nichols, Brandon Rothrock, Duen Horng Chau, and Brad A. Myers. 2006. Huddle: automatically generating interfaces for systems of multiple connected appliances. In Proceedings of the 19th annual ACM symposium on User interface software and technology (UIST '06). Association for Computing Machinery, New York, NY, USA, 279–288. https://doi.org/10.1145/1166253.1166298

[34] Promptions. Microsoft Foundry. Retrieved December 4 2025 from https://labs.ai.azure.com/projects/promptions/

[35] Nathalie Riche, Anna Offenwanger, Frederic Gmeiner, David Brown, Hugo Romat, Michel Pahud, Nicolai Marquardt, Kori Inkpen, and Ken Hinckley. 2025. AI-Instruments: Embodying Prompts as Instruments to Abstract & Reflect Graphical Interface Commands as General-Purpose Tools. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 1104, 1–18. https://doi.org/10.1145/3706598.3714259

[36] SIGCHI Accessibility Guide for Authors. Retrieved October 3 2025 from https://sigchi.org/resources/guides-for-authors/accessibility/

[37] Stitch. Retrieved September 27 2025 from: https://stitch.withgoogle.com/

[38] Yao Song, Christoph Gebhardt, Yi-Chi Liao, and Christian Holz. 2025. Preference-Guided Multi-Objective UI Adaptation. In Proceedings of the 38th Annual ACM Symposium on User Interface Software and Technology (UIST '25). Association for Computing Machinery, New York, NY, USA, Article 120, 1–13. https://doi.org/10.1145/3746059.3747645

[39] Sangho Suh, Hai Dang, Ryan Yen, Josh M. Pollock, Ian Arawjo, Rubaiat Habib Kazi, Hariharan Subramonyam, Jingyi Li, Nazmus Saquib, and Arvind Satyanarayan. 2024. Dynamic Abstractions: Building the Next Generation of Cognitive Tools and Interfaces. In Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (UIST Adjunct '24). Association for Computing Machinery, New York, NY, USA, Article 91, 1–3. https://doi.org/10.1145/3672539.3686706

[40] Kashyap Todi. 2019. Reimagining the Role of the Expert: From Interface Design to Interface Curation. In Proceedings of the Halfway to the Future Symposium 2019 (HttF '19). Association for Computing Machinery, New York, NY, USA, Article 2, 1–3. https://doi.org/10.1145/3363384.3363386

[41] Kashyap Todi, Gilles Bailly, Luis Leiva, and Antti Oulasvirta. 2021. Adapting User Interfaces with Model-based Reinforcement Learning. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). Association for Computing Machinery, New York, NY, USA, Article 573, 1–13. https://doi.org/10.1145/3411764.3445497

[42] Kashyap Todi, Jean Vanderdonckt, Xiaojuan Ma, Jeffrey Nichols, and Nikola Banovic. 2020. AI4AUI: Workshop on AI Methods for Adaptive User Interfaces. In Companion Proceedings of the 25th International Conference on Intelligent User Interfaces (IUI '20 Companion). Association for Computing Machinery, New York, NY, USA, 17–18. https://doi.org/10.1145/3379336.3379359

[43] Priyan Vaithilingam, Elena L. Glassman, Jeevana Priya Inala, and Chenglong Wang. 2024. DynaVis: Dynamically Synthesized UI Widgets for Visualization Editing. In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24). Association for Computing Machinery, New York, NY, USA, Article 985, 1–17. https://doi.org/10.1145/3613904.3642639

[44] Priyan Vaithilingam and Philip J. Guo. 2019. Bespoke: Interactively Synthesizing Custom GUIs from Command-Line Applications By Demonstration. In Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology (UIST '19). Association for Computing Machinery, New York, NY, USA, 563–576. https://doi.org/10.1145/3332165.3347944

[45] Jason Wu, Kashyap Todi, Joannes Chan, Brad A Myers, and Ben Lafreniere. 2024. FrameKit: A Tool for Authoring Adaptive UIs Using Keyframes. In Proceedings of the 29th International Conference on Intelligent User Interfaces (IUI '24). Association for Computing Machinery, New York, NY, USA, 660–674. https://doi.org/10.1145/3640543.3645176