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Child-Centered AI for Empowering Creative and Inclusive Learning Experiences

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ABSTRACT

In an era where Artificial Intelligence (AI) permeates our lives, its impact on children raises critical considerations. This workshop aims to delve into the multifaceted realm of Human-Centered AI (HCAI) for children, exploring the transformative role of AI in fostering creative expression and inclusive learning environments. Our goal is to unite diverse research expertise and methodologies, focussing on how AI can be tailored to meet diverse learning needs, enabling personalized and engaging educational experiences which support creativity. This workshop will bring together researchers, educators, technologists, and practitioners for expert talks, interactive demonstrations, and collaborative discussions, . Our goal is to foster a multidisciplinary dialogue on developing child-centered AI solutions that enhance creative learning while being mindful of inclusivity, ethical considerations and safeguarding against potential risks.

CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI)**; • **Applied computing** → **Education**; • **Computing methodologies** → *Artificial intelligence.*

KEYWORDS

HCI, Child-Computer Interaction, Child-Centred AI design, ethics

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1 BACKGROUND

In our rapidly evolving technological landscape [2, 3], children's interactions with Artificial Intelligence (AI) necessitate focused attention due to the profound ethical challenges they present [5]. The growing integration of AI into childhood experiences offers significant possibilities for formal and informal learning and, simultaneously, poses formidable challenges [6–9]. Some existing research focuses on what children should know *about* AI. For example, Touretzky and colleagues [8] identify the crucial AI concepts that empower students as consumers and future contributors, encapsulated in the Five Big Ideas in AI: (1) Perception, (2) Representation and Reasoning, (3) Learning, (4) Human-AI Interaction, and (5) Societal Impact. Other researchers, including Resnick [7], have focused on what children can learn creatively *with* AI, and how generative AI technologies can be designed and integrated in learning environments to support their development as creative, curious, collaborative learners. Another area of research centres on concerns about privacy and cognitive development, which emerges prominently with AI-driven toys [4]. To empower children as creators, thinkers and citizens in an AI-driven future, we must design AI interactions tailored to children, safeguard children's rights and privacy, focus on AI literacy, and center children's voices in developing AI tools and policies [1]. Navigating this complex landscape necessitates a comprehensive exploration of the nuanced intersections of Human-Centered AI and childhood. This workshop aims to scrutinize critical issues such as data privacy, ethical considerations, and educational design. By fostering dialogue and collaboration, we strive to chart a balanced and human-centric course for the future of AI in children's lives, whilst also discussing and addressing the ethical dilemmas embedded in these interactions.

More specifically,this workshop aims to 1) explore the potential of AI to enhance creative learning experiences for all children in an inclusive way and 2) foster dialogue and collaboration among diverse professionals to develop inclusive and accessible AI educational tools. Our goal is to guide participants in navigating the multifaceted realm of AI in relation to children, within the broader theme of inclusive happiness, aiming to cultivate innovation and

address challenges responsibly. By facilitating collaborative discussions, hands-on activities, and expert insights, our goal is to equip attendees with the knowledge and tools needed to responsibly leverage AI's opportunities. This effort ensures a positive impact on children's development and well-being, aligning with the overarching theme of the IDC community, which strives to contribute to the happiness of children worldwide. By the end of the workshop, participants will have a deeper understanding of the opportunities and challenges in this field and be inspired to contribute to the development of AI solutions that are not only technologically advanced but also pedagogically sound and socially responsible. We invite participants to engage in insightful discussions, share expertise, and collaboratively address the intricate challenges and opportunities associated with HCAI for children.

2 ORGANIZERS

Grazia Ragone recently awarded a doctorate in Human-Computer Interaction (HCI) from the University of Sussex, where she specialized in exploring interactions with autistic children, delving into nuances such as imitation and social motor synchrony. Now positioned as a postdoc researcher at the University of Bari, Italy, her focus is pioneering metrics for evaluating the symbiotic relationship between humans and AI. Her research centers on incorporating human factors to shape technology for an enhanced overall human experience.

Safinah Ali is a PhD candidate at MIT Media Lab. Her research focuses on child-robot interaction for creative learning. She designs AI experiences and agents that foster creative expression for children. She also develops AI curricula to help children be responsible users and creators of and using AI.

Andrea Esposito is a Doctoral student in Human-Centered Artificial Intelligence at the University of Bari, Italy. His research interests are in the intersection of Human-Computer Interaction and Artificial Intelligence, delving into the impact that autonomous systems have on humans and aiming at understanding how AI systems can be designed to fulfill users' needs while being reliable, safe, and trustworthy.

Judith Good is a Professor in Human Computer Interaction, University of Amsterdam, Netherlands. Her research interests focus on the co-design of new technologies for children, with and without disabilities. She is also interested in developing new participatory methodologies for typically marginalised populations to have greater involvement in both the design and evaluation of new technologies.

Kate Howland is a Professor of Interaction Design at the University of Sussex. Her research focuses on the design of technologies for learning and collaboration, with active involvement from young people and domain experts. Her current interests include the use of conversational and gestural interfaces in educational contexts.

Carmelo Presicce is a PhD candidate at the MIT Media Lab's Lifelong Kindergarten group. His research is centered on designing and facilitating creative learning experiences and communities for children and educators. He is currently exploring how generative AI can open up new creative possibilities for children, all while maintaining a focus on creating environments that foster authentic, empathetic human relationships.

3 WEBSITE

A website (http://ccai4ecile.di.uniba.it) has been published, including the call for participation and all relevant information (e.g., key dates, format, submission instructions, etc.), comprising biographies of the organizers. Once consensus is reached on the list of position papers, the website will be expanded to include a program and a list of the participants (including the title and a link to the published version of their position paper).

4 PRE-WORKSHOP PLANS

In the lead-up to the workshop, we'll employ a dynamic online strategy. A dedicated website and active social media presence will broadcast workshop details, fostering engagement. Collaborations with educational institutions and organizations will expand our network. Targeted email campaigns will extend invitations to professionals in AI, HCI and child development. Pre-workshop webinars featuring experts will stimulate interest and initiate community dialogue. Engagement in relevant online forums will further spread awareness. We'll encourage content contributions, fostering a collaborative atmosphere. A call for contributions will invite diverse perspectives. Through these initiatives, we aim to cultivate a vibrant and interconnected community prior to the workshop.

5 WORKSHOP STRUCTURE

The workshop spans half a day, with the following schedule:

Introduction (30 mins): workshop motivation, agenda, and organizer introductions;

Ice breaker activity (15 mins): activity to facilitate attendees getting to know each other;

Attendee presentations (60 mins, 3 mins per participant): brief presentations of submissions, ideas, or opinions

Coffee break (15 mins)

Group discussion (30 minutes): discussion allowing attendees the opportunity to go in depth on a specific topic;

Panel discussion with keynote (45 mins)

Group activity (30 mins): attendees will work in small groups, discussing a specific child target group (e.g., children with diverse learning needs) in depth. Each group will then present their reflections, principles, and prompts for guidelines.

Wrap up (15 mins): organizers will summarize the workshop activities, with attendees providing feedback, and talk through post-workshop plans.

Resources needed We will require a room which can accommodate approximately 30 people with projection facilities.

6 POST-WORKSHOP PLANS

Building upon the results of the workshop, we aim to create a comprehensive checklist encompassing crucial considerations for Human-Centered Artificial Intelligence (HCAI) for children. We aim to develop initial considerations for developing ethical child-centered AI tools, interactions and agents. We aim to focus on playful interaction, child appropriate machine learning models, ethical considerations, data security and children's rights. Participants of the workshop will be encouraged to elaborate on their position papers, with the possibility of inclusion in a dedicated special issue of a relevant prestigious journal, e.g. the International Journal of

Child-Computer Interaction (IJCCI - editors to be approached if workshop is accepted).

7 CALL FOR PARTICIPATION

The IDC24 interactive workshop aims to unite a diverse community whose members are passionate about shaping the future of AI for children. The workshop targets researchers, practitioners, educators, and professionals interested in AI's implications for child development, those developing AI-driven tools for children, educators exploring AI's impact in the classroom, and individuals concerned with ethical considerations and privacy in childhood AI.

Participants are invited to submit diverse contributions related to design, technology application, evaluation, reflections, and personal experiences in Human-Centered Artificial Intelligence (HCAI) design for children. Suitable topics include the tangible effects of AI on child development, tailored design methodologies for HCAI systems, ethical frameworks, technical aspects, privacy and security considerations and effective evaluation methodologies.

Position papers will be assessed for relevance, presentation quality, and debate potential. Accepted authors may extend papers in a special issue of relevant journals. At least one author of each accepted position paper must attend the workshop. Participants must register for both the workshop and the main conference.

Submit a brief position paper or project description (1-4 pages) presenting insights, research, or experiences related to HCAI for Children. Acceptable formats include written content in the form of 1) an abstract (300-500 words), 2) a design example or personal experience in AI design for children (600-800 words), or 3) a short paper (research, opinion, position) adhering to the CEUR-WS CEURART (single column, at least 5 pages excluding references). Alternatively, submissions in the form of videos or other graphical representations are also welcome, ensuring accessibility. Submissions are managed through EasyChair.

We will select a maximum of 20 participants for this workshop based on the quality of submissions, diversity of topics and perspectives, and their anticipated contribution to the workshop.

Accepted submissions will feature on the workshop website. At least one author of each accepted position paper must participate in the workshop, and all workshop attendees must register for both the workshop and the main conference.

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