

INDUSTRY BRIEFING:

CONVERSATIONAL AI FOR CHILDREN



Ethical and responsible design

Key points from the paper 'Interactive storytelling for children: A case-study of design and development considerations for ethical conversational AI'

What's the report about?



The paper **reviews recent research into the ethical implications of conversational artificial intelligence (CAI) for children.**

The paper was produced during a project by Digital Creativity Labs and digital agency Joi Polloi. This project, called AI Fan Along, was funded by XR Stories.

In this project, the partners used **AI voice technologies to engage with children** by developing a meta-story **chat tool**. The chat tool allows children to engage with characters from their favourite TV shows through voice-assisted smart devices.

This briefing:

- shares some key findings from the research strand of the project
- summarises ways to design CAI for children more ethically and responsibly

Context and new insights

Common technologies that use AI include:

- voice-activated virtual assistants such as Alexa, Google Home and Siri
- digital assistants that use voice recognition, speech synthesis and natural language processing (NLP)

There is increasing interest in the ethics of AI devices like these. But we need to know more about:

- how children perceive them
- how they affect children

The review authors grouped the implications of CAI for children under four themes:

1. Children's cognitive and linguistic development

- AI can help young people learn and develop skills. This is particularly helpful for young people with cognitive and linguistic impairments.
- CAI allows children to search online, even if they can't read and write.
- However, online information is not always reliable.
- Voice agents can affect how polite and socially developed children are. For example, children may become impatient when asking questions of humans, who can't always answer as quickly as voice agents.
- As children's speech is not yet fully developed, voice agents might not always understand them.
- CAI for children needs to be friendly and engaging. Voice, tone and script are important for this.

1 in 4

Already one in four children between 5 and 16 years of age live in a household with a voice-activated virtual assistant in the UK'.

(Childwise Monitor, 2019)



2. How children learn moral and social codes of behaviour

- Children are still learning how to form dialogue and draw meaning, and developing their relationships, and AI can influence this.
- Children form emotional attachments to machines/computers and even their voice agents. But some people feel that emotions and emotional attachment should be reserved for human–human interaction.
- Some children show machines a lack of care. Some are tempted to abuse or trick systems.
- Voice AI may encourage children to expect immediate responses or gratification.

3. Ethical concerns: privacy, consent, trust

- Privacy and transparency are key concerns, and it is vital to safeguard young people and their rights.
- Some people are concerned about parental access to and control of voice AI.
- Child users don't understand what happens to their data, while parents may be acutely aware of potential harms.
- Sometimes children tell voice agents their secrets. Parents may be concerned that their children are telling voice agents things they haven't told their parents, for example disclosing bullying or abuse.

4. Inclusivity

- Gender, age, race and class biases can affect how technologies are developed. For example, if AI isn't trained on a certain accent or tone of voice, it won't understand it. AI has commonly been trained on more privileged groups such as white males.
- Research suggests that users may assign gender and race to systems.



What next / action points?

How can we make sure we develop CAI for children ethically and responsibly?

Design guidelines from Digital Creativity Labs and Joi Polloi:

- **accept** collective responsibility
- **engage** stakeholders in a two-way dialogue
- **anticipate** and **reflect on** issues for the privacy and rights of young people
- **ask** these questions and be transparent about the answers:
 - Q1. What data will be collected?
 - Q2. How will the collected data be used?
 - Q3. How far and in relation to which regulations has the AI safeguarded children's safety and privacy?
 - Q4. How do we develop a child-friendly and engaging CAI and what behaviours should it exhibit?
 - Q5. How do we reflect on and mitigate against bias?
 - Q6. How do we ensure inclusive, responsible innovation and use participatory design techniques?
 - Q7. What technology and approaches should be adapted to provide moral care and direct pro-social behaviour?

Industry strategy

To help developers produce CAI for children ethically and responsibly, there must be **further research** with developers and stakeholders on the ethics of storytelling through CAI.

This will enable the industry to access:

- diverse voices
- external ethics advice

throughout the **design process**.

The **range of designers** themselves also needs to be more diverse, and the **particular needs of children** must be taken into account.

Issues and actions by theme:

1. Children's cognitive and linguistic development

- **Design** content that directs children to reliable sources.
- As children use voice agents more, **include** children and parents in design processes and **build** systems that the public can understand.
- To make CAI inclusive, **ensure** voice agents understand children even though their speech is not yet fully developed.
- **Design** voice, tone and script to make CAI friendly and engaging for children.
- **Support** children's learning, politeness and social development by having voice agents explain why they can or can't respond to certain demands.

Industry strategy

... there must be further research with developers and stakeholders on the ethics of storytelling through CAI

Ethical concerns

... ask 'What kind of values should guide the project?'

2. How children learn moral and social codes of behaviour

- Design affects whether children see the agent as human: **consider** how children will view embodied AI (robots) and **make it clear** to users where the limits of an AI system are.
- **Minimise** opportunities for children to abuse or trick systems.
- When designing voice AI for children, **understand** how it can affect children's level of civility and the way they learn manners.
- In CAI, **be responsive** to the way child users of different demographics use language.

3. Ethical concerns: privacy, consent, trust

- To ensure the responsible design of voice agents, **ask** 'What kind of values should guide the project?'
- **Engage** thoroughly with children's privacy law. **Uphold** their rights and dignities at all times.
- **Consider...** What is the system recording? When is it 'on'? Is it listening? What data is recorded? How is it stored? What drives the system's decisions on recording and storing data? Perhaps include visual indicators.
- **Offer** parents the opportunity to be involved in discussions about privacy at the design stage, and **include** stakeholders.

4. Inclusivity

- **Be alert** to biases of gender, age, race and class in new AI projects.
- As suggested above, to make CAI inclusive, **ensure** voice agents understand children even though their speech is not yet fully developed.

- **Avoid** exclusion and bias by training the system on a range of voices, including ones with different regional accents, speech disorders and racial backgrounds.
- **Think** about multiple design factors, not just voice, when trying to challenge stereotypes in CAI systems – for example, appearance of toys and embodied AI (robots).
- **Engage** in more stakeholder dialogue and consultation before deciding on content and positioning.
- In summary, **be inclusive** – we are all unique, so mitigate against bias in the design of CAI.



About the author



Dr Jennifer Chubb is a Research Fellow at the University of York, with a focus on the impact of science and technology and expertise in research assessment, responsibility, ethics, artificial intelligence and science policy. For the past three years, Jenn's work at York has focused on the future of artificial intelligence, where she has researched the ethics of conversational AI for children's storytelling and specifically the role of AI in the research process. Jenn's current fellowship primarily focuses on the ethical and responsible development of AI technologies and how stories told about AI contribute to sense-making.

Links / further reading

Read the full paper: <https://doi.org/10.1016/j.ijcci.2021.100403>

More about the lead author: <https://digitalcreativity.ac.uk/people/dr-jenn-chubb>

Digital Creativity Labs: <https://digitalcreativity.ac.uk>

Joi Polloi: <https://joipolloi.com/>

XR Stories: <https://xrstories.co.uk/>

Digital Creativity Labs. Conversational AI for Kids: Tips for the Ethical and Responsible Design: <https://digitalcreativity.ac.uk/content/conversational-ai-kids-tips-ethical-and-responsible-design>

About the AI Fan Along project: <https://digitalcreativity.ac.uk/projects/ai-fan-along>

UNICEF. AI for Children: <https://www.unicef.org/globalinsight/featured-projects/ai-children>

UNICEF. Policy Guidance on AI for Children: <https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children>

UNICEF. Violence Against Children Online: <https://www.unicef.org/protection/violence-against-children-online>

MIT Technology Review. Why Kids Need Special Protection from AI's Influence: <https://www.technologyreview.com/2020/09/17/1008549/kids-need-protection-from-ai/>

Inclusivity

... we are all unique, so mitigate against bias in the design of CAI.

Disclaimer

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