

Artificial intelligence- based child-avatars

simulamet

OSLOMET



People

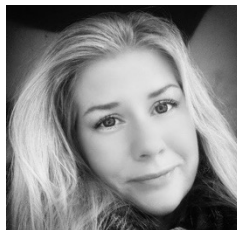


- Heterogeneous group of researchers with various backgrounds

- Computer science



- Child welfares / psychologists



- Large group of national and international collaborators - experts and students

Child Avatar

- Developing a real-time, realistic dynamic AI child avatar.
 - Combination of several AI components.
 - Understand the natural language.
 - Synthesizing audio and video of a child avatar.
- For the training of the investigative interviews with children.

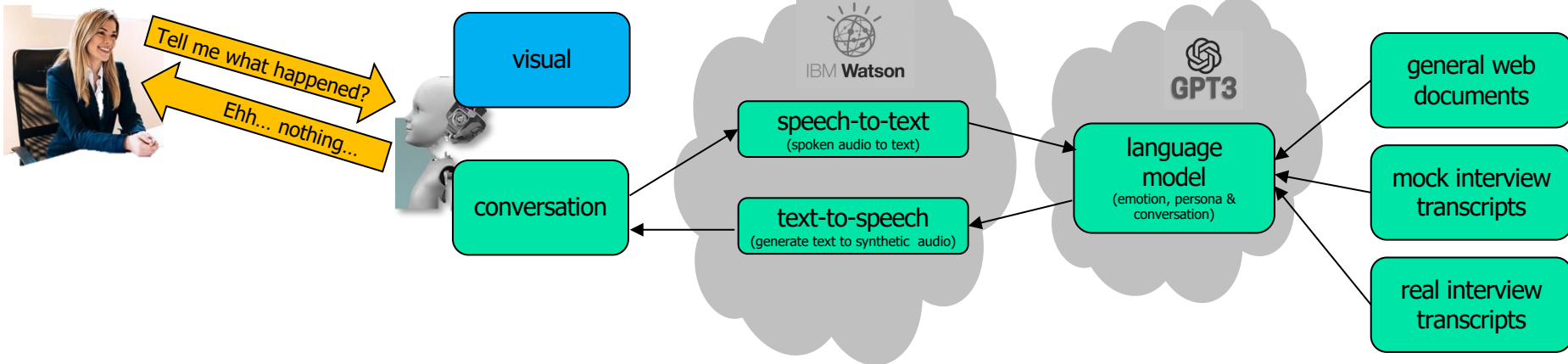


AI-based Avatar: “Complete” system

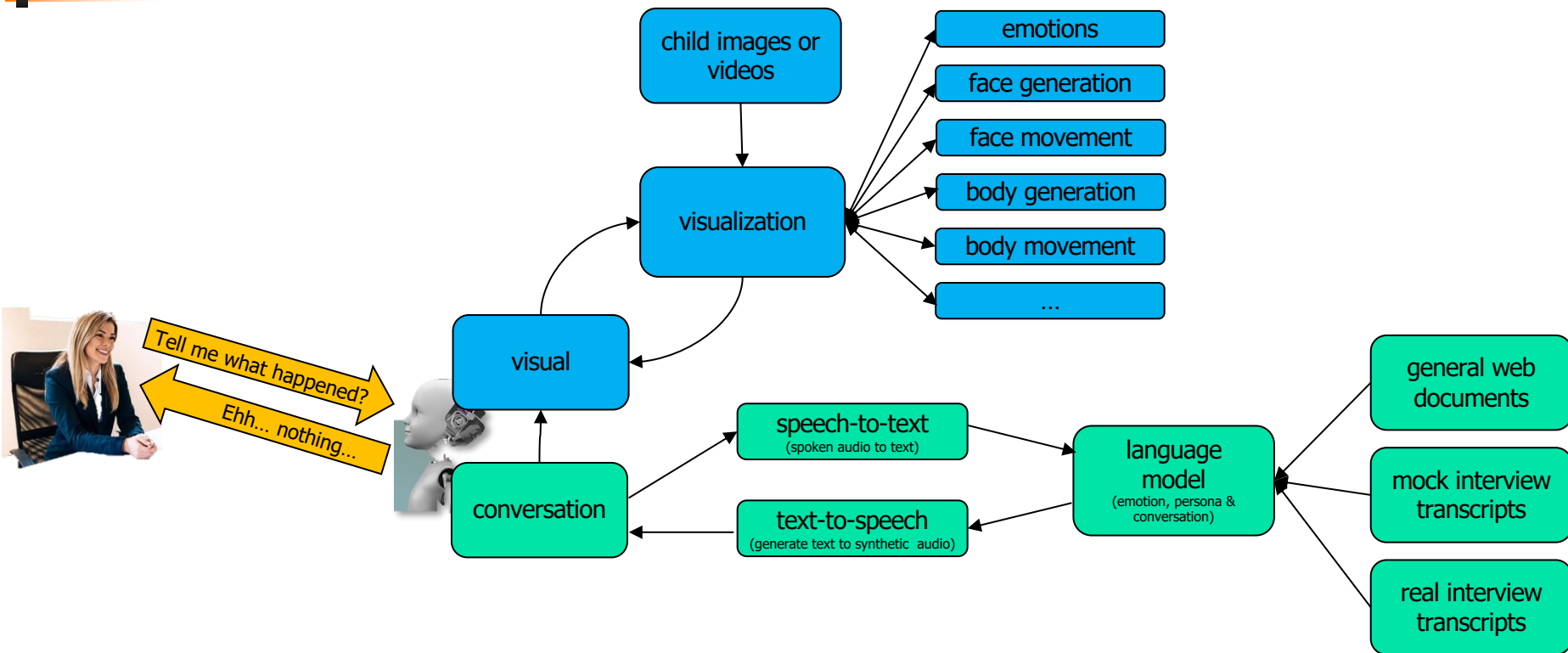
Structured, dynamic and
cost-effective training



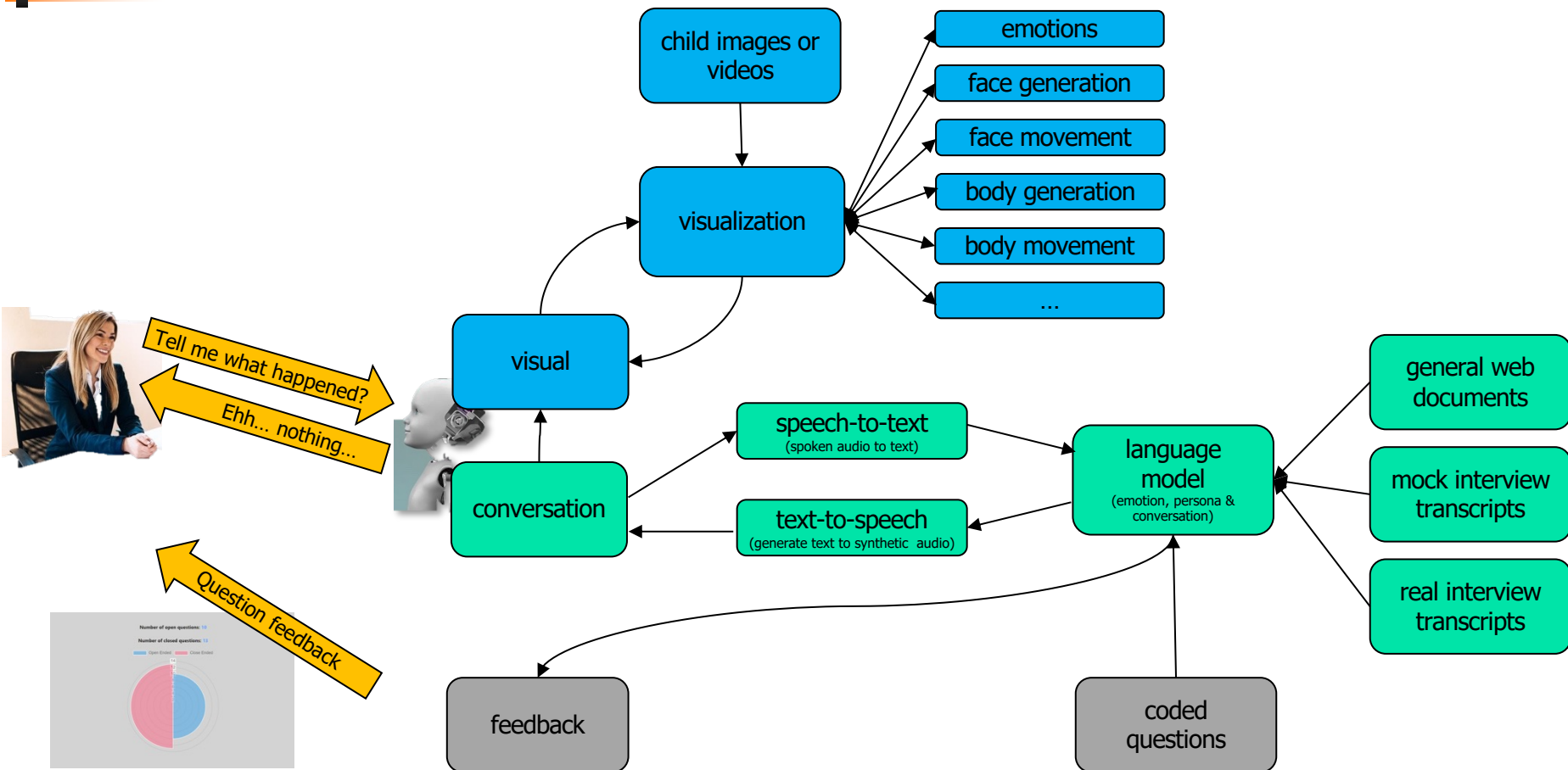
AI-based Avatar: "Complete" system

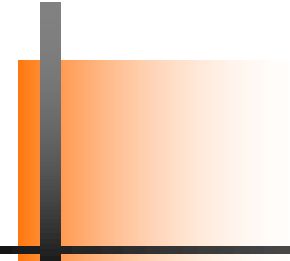


AI-based Avatar: "Complete" system



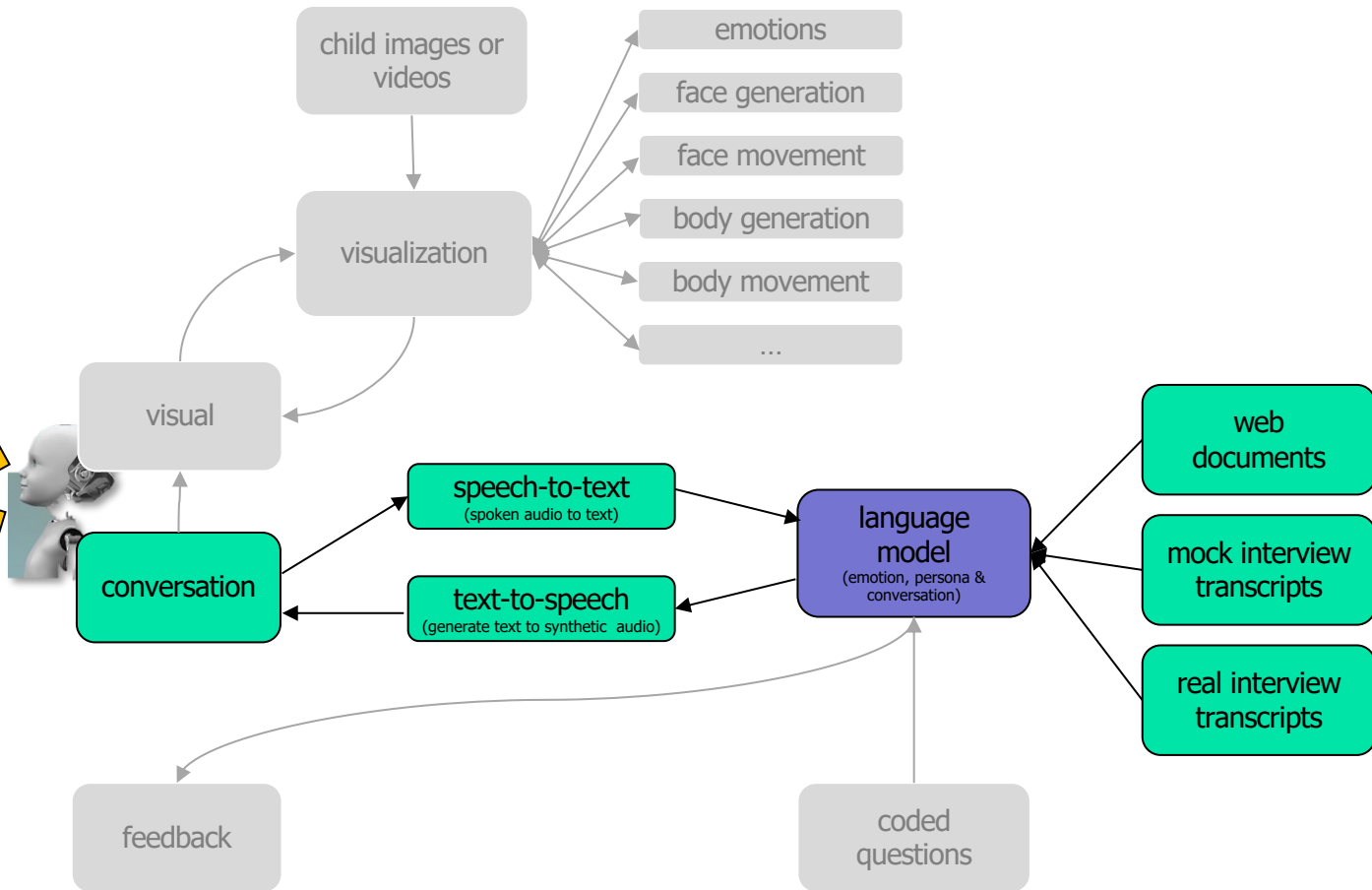
AI-based Avatar: "Complete" system





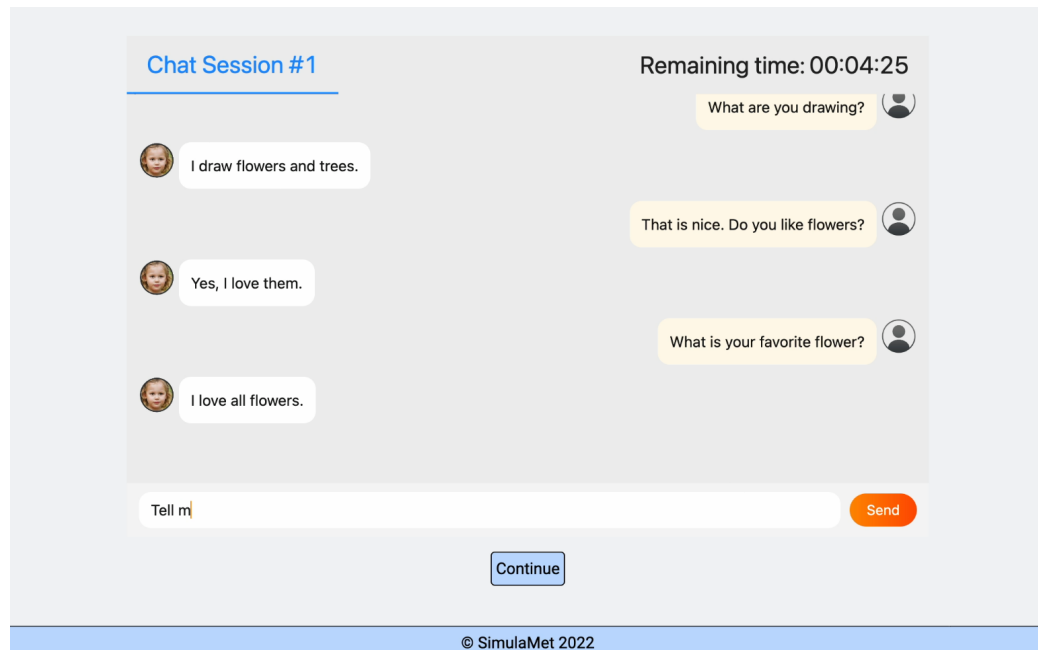
Intelligent? conversations





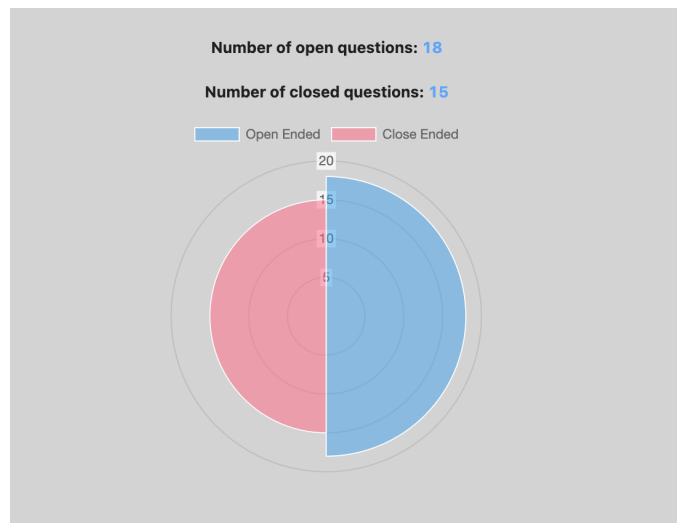
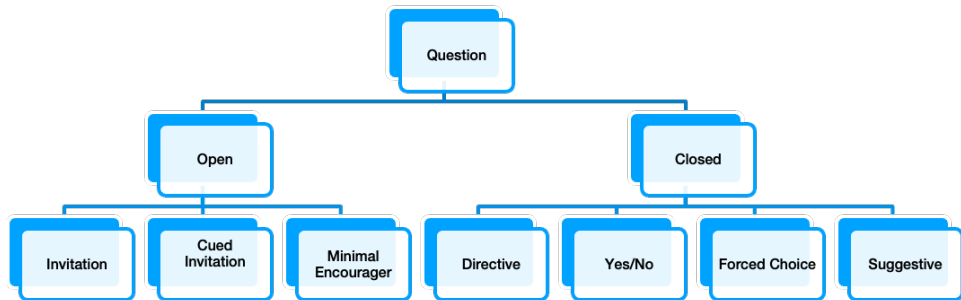
Child Avatar Chatbot

- Capable of generating child-like dynamic conversations
- Behavior as a function of the child's age and persona
 - Response length
 - Complex questions
- Child avatar characters
 - Theresa age 7, sexual abuse
 - Hillary age 6, sexual abuse
 - Lisa age 6, physical abuse



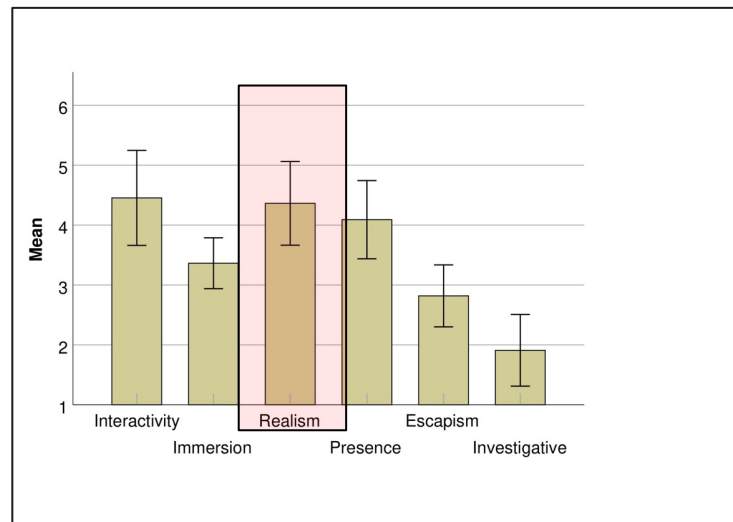
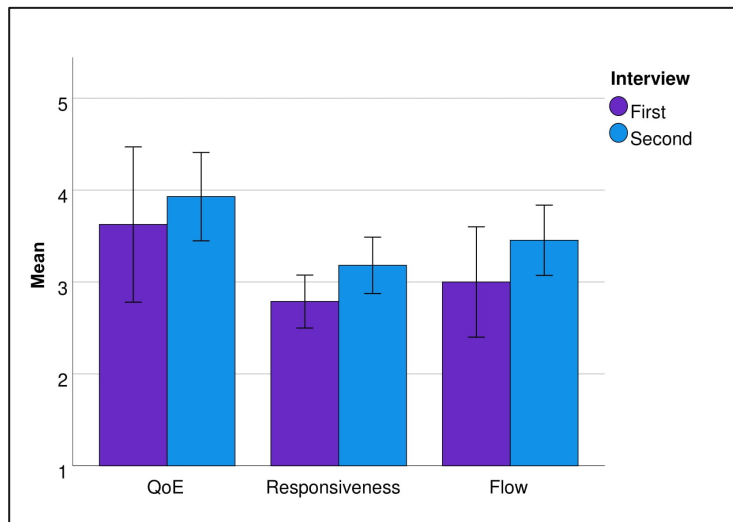
Feedback

- Indirect
 - Deflecting complex questions
 - Short responses
- Direct
 - Coding of transcriptions
 - Training an AI classification model
 - Distribution of Qs
 - Question guide



Pilot Study with Theresa in VR

- 2 sessions with Theresa

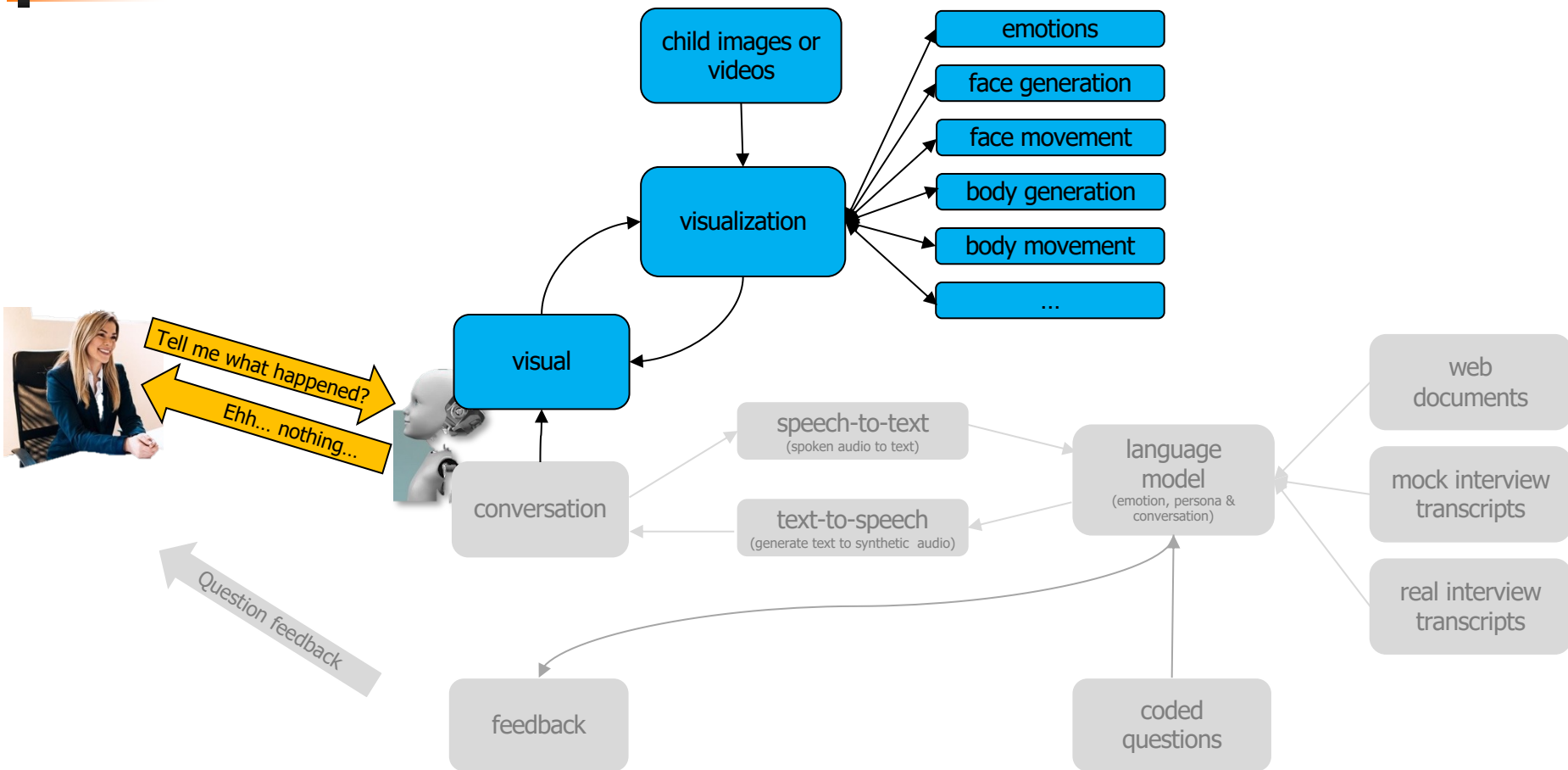


- 72 % - Enhance knowledge and skills in communication
- 81% - Enhance self-efficacy

The visual avatar

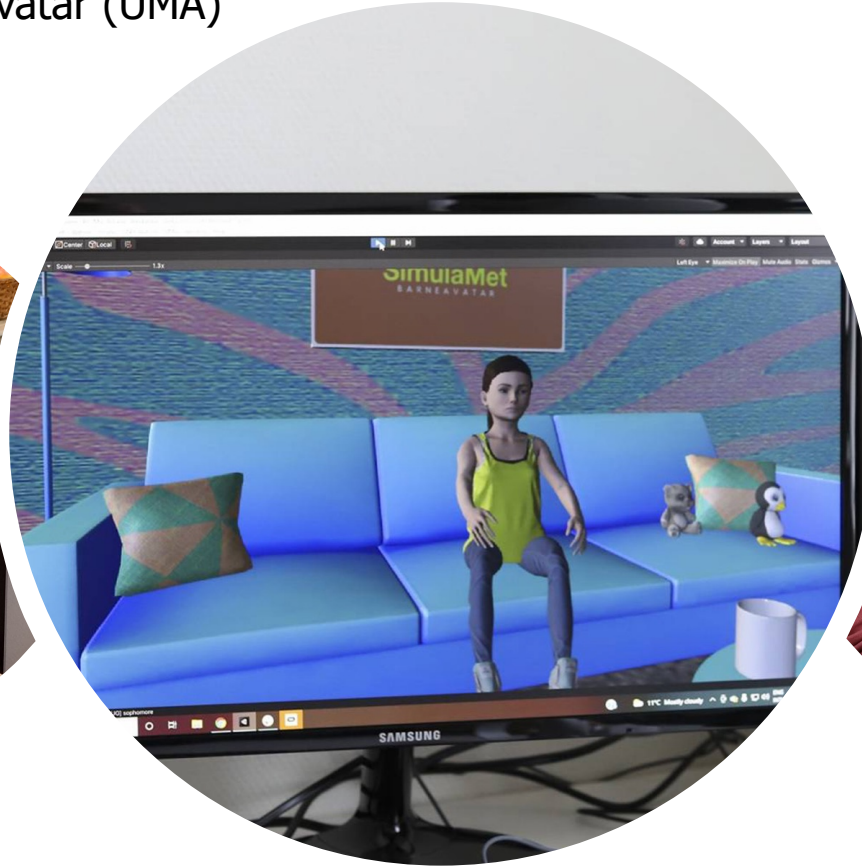


AI-based Avatar: "Complete" system

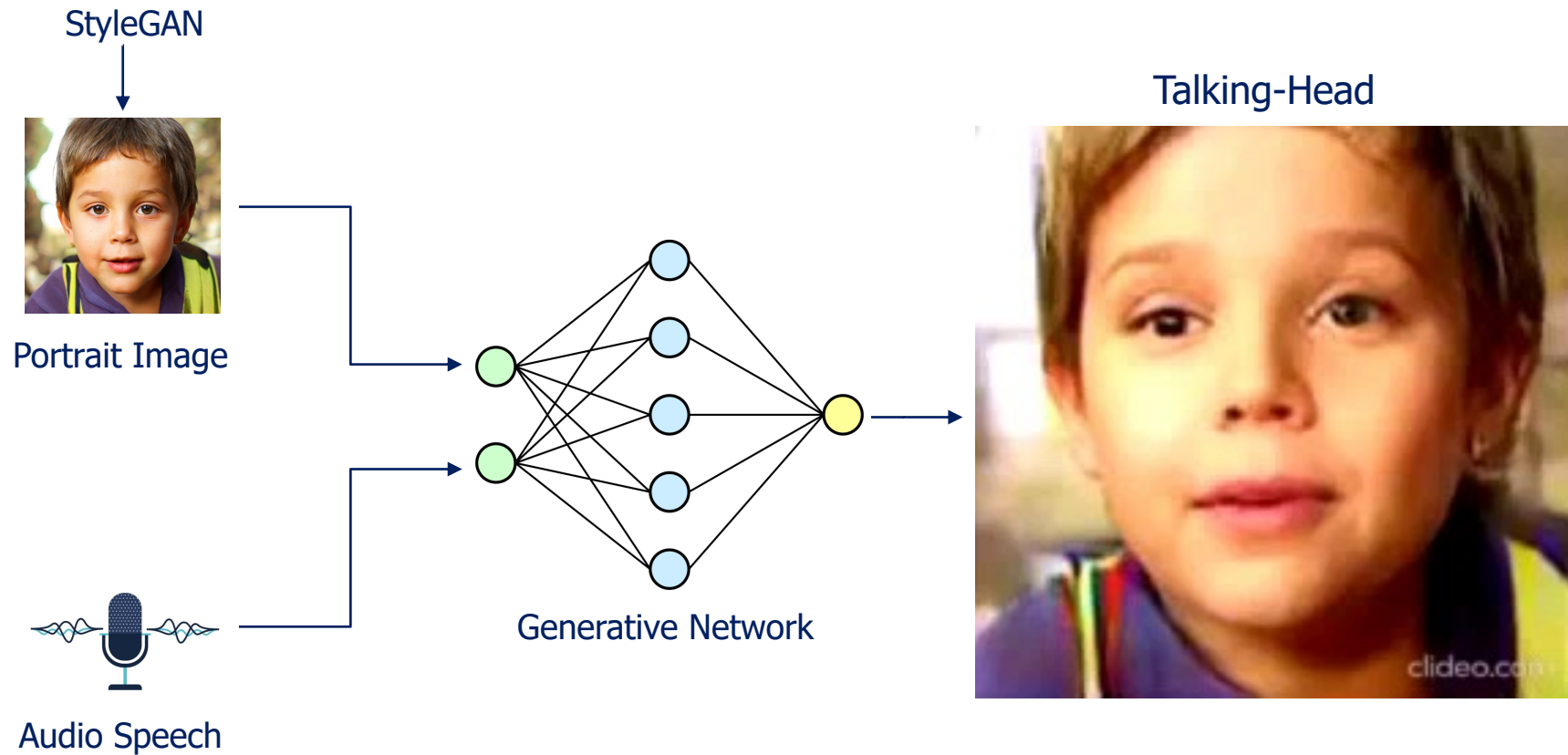


The First Prototype of the System

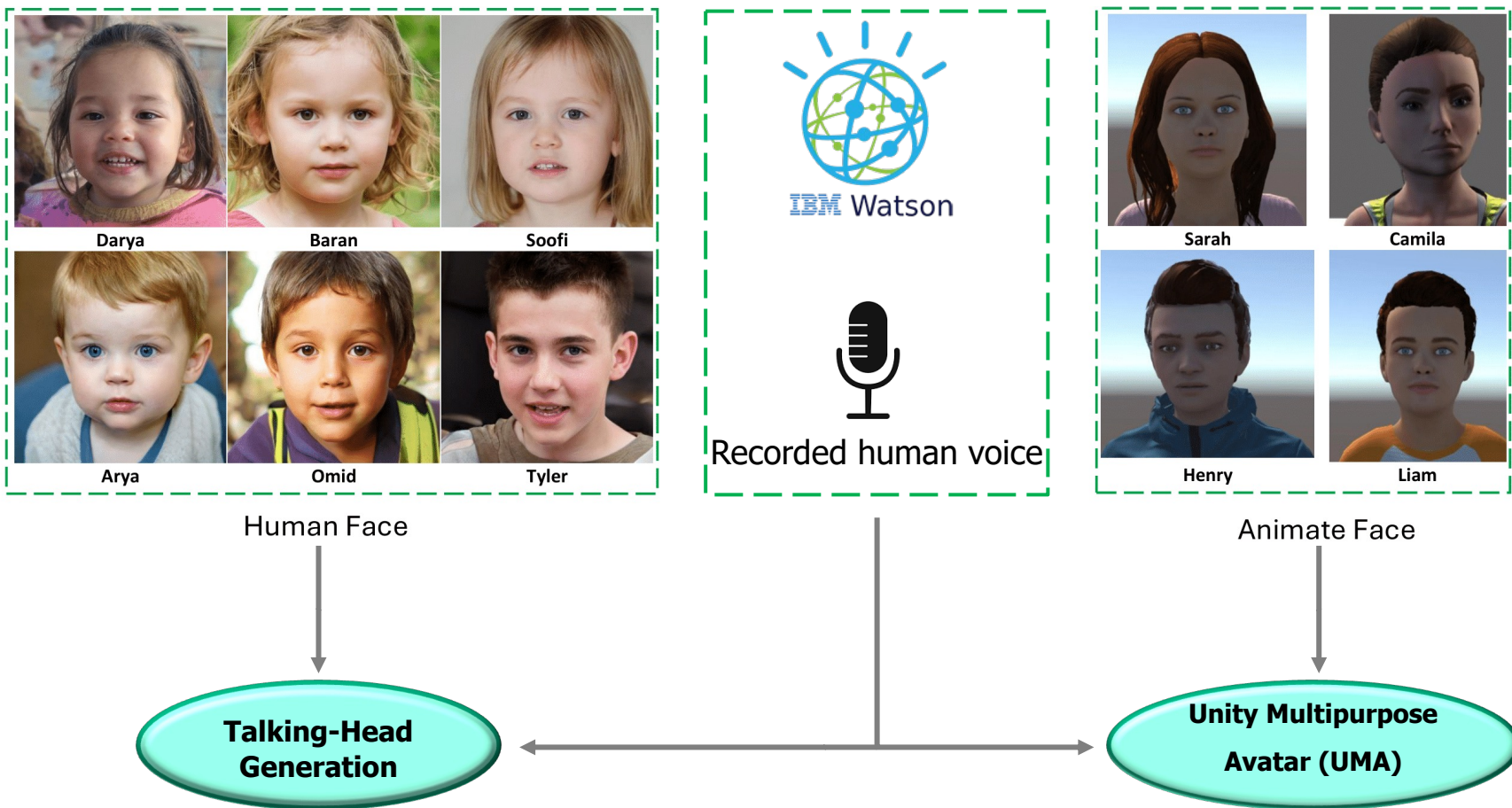
Unity Multipurpose Avatar (UMA)



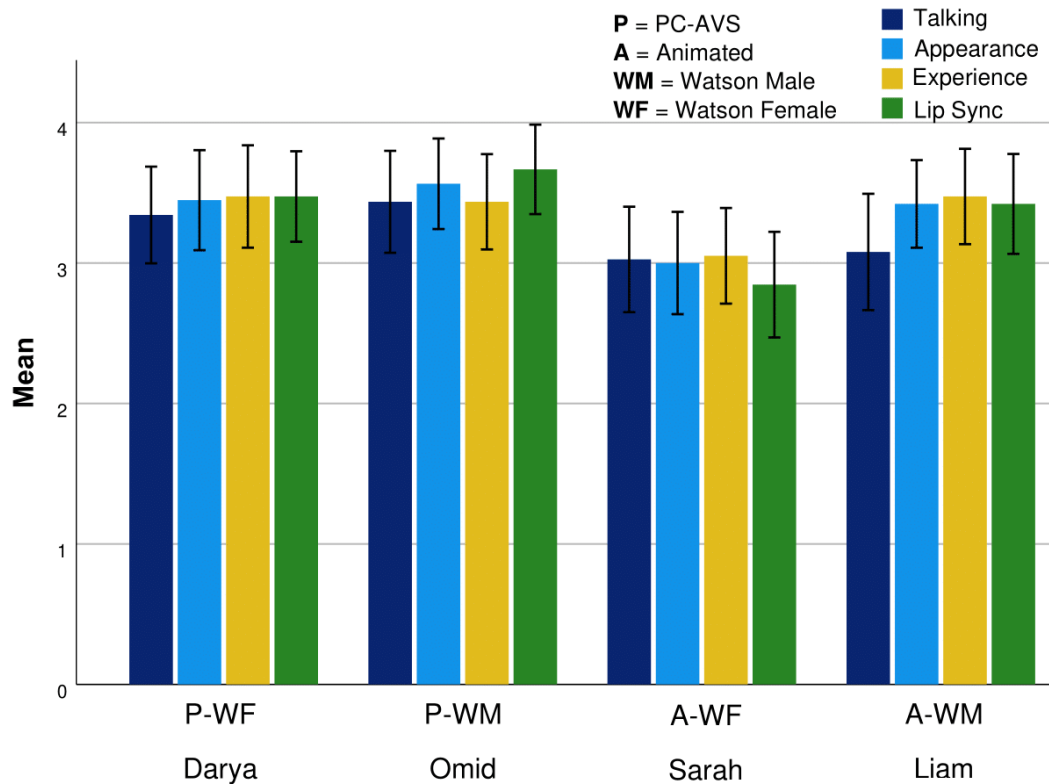
Talking-Head Generation



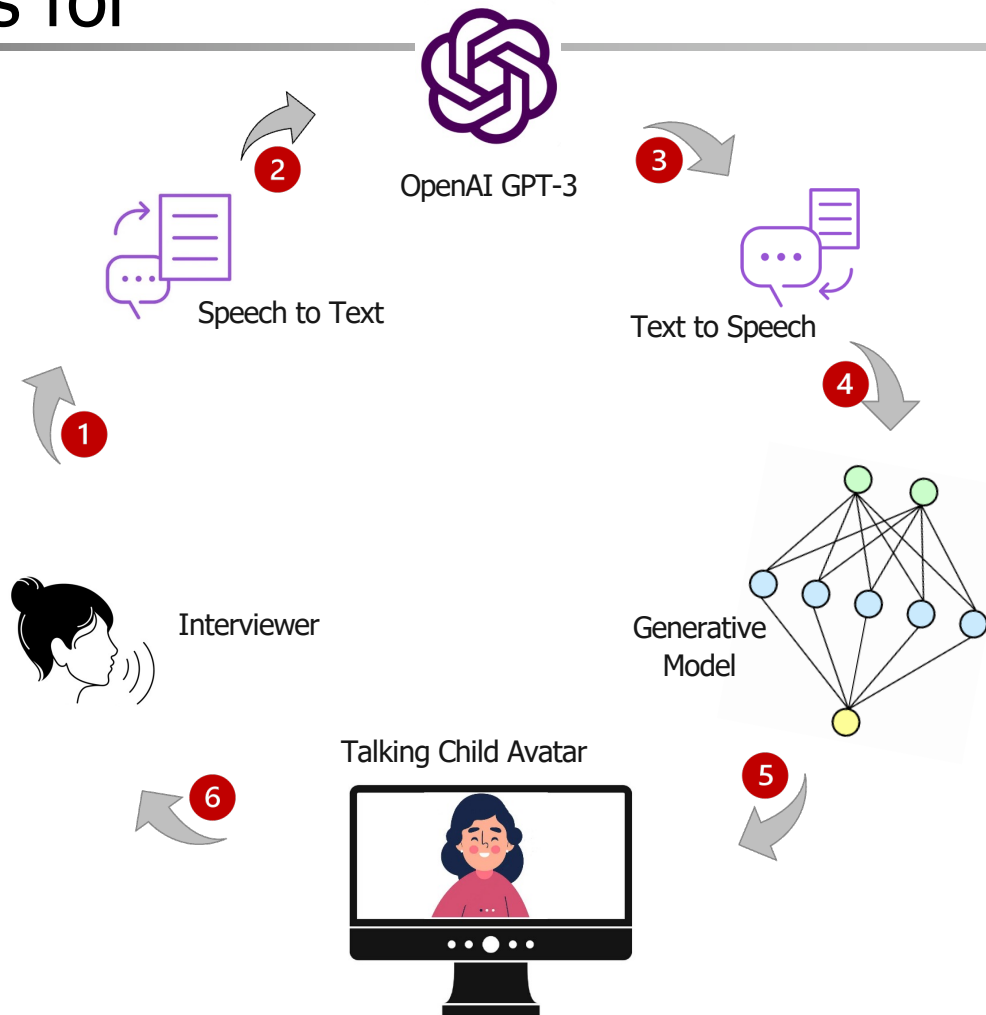
A comparison of the two approaches



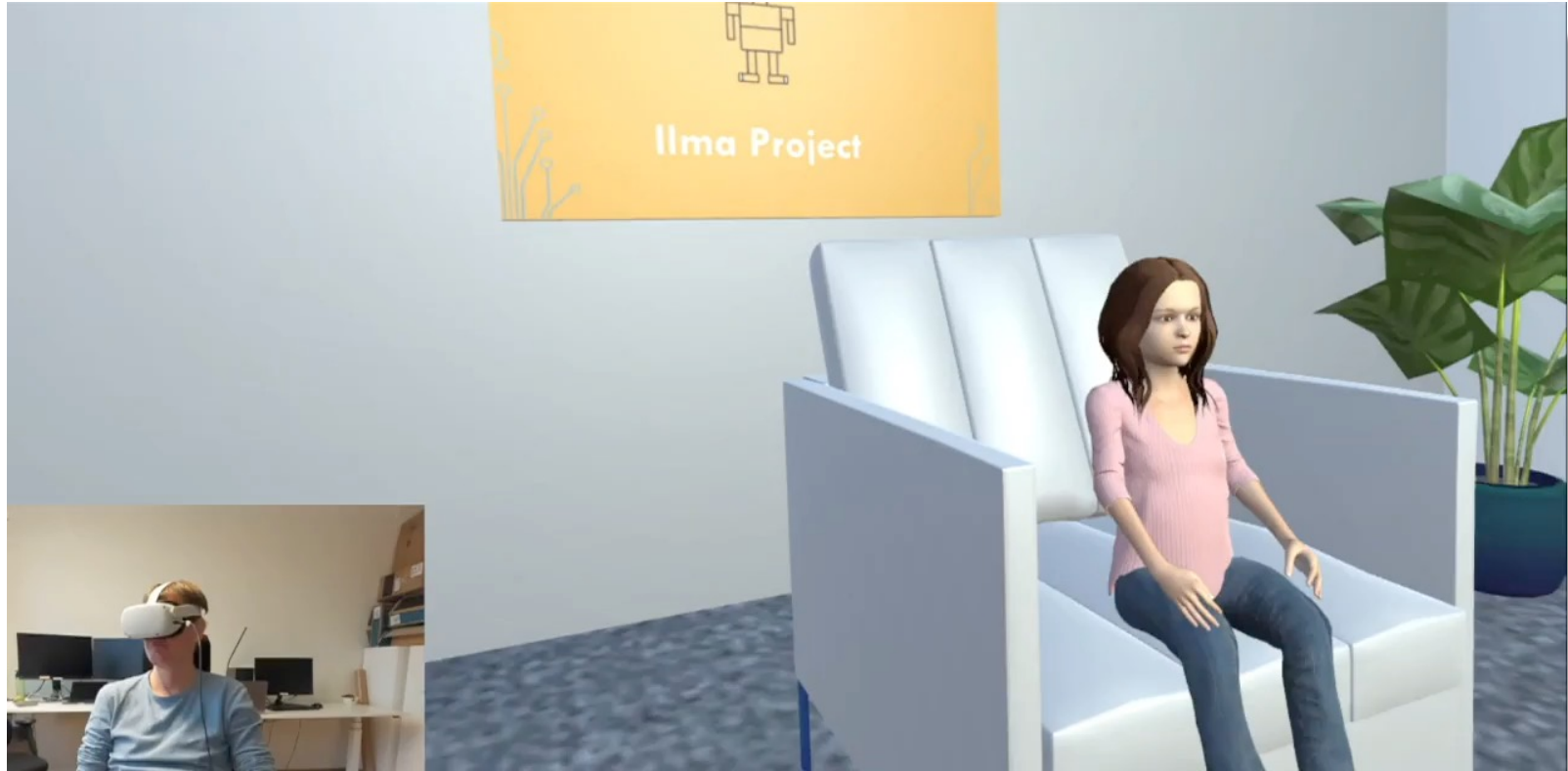
Which avatars are the best, avatars created with GANs or a game engine?



What are the possibilities for real-time execution?



Demo: VR avatar



**PROBLEM
SOLVED!**

**CASE
CLOSED**



So, all problems solved!!??



Summary and Next Steps

- We have a working prototype



But, that's where the work just starts:

- More specific data/domain knowledge
- Different languages
- Emotions and personas
- Extensive testing
- Real-time interaction of the more realistic visual avatars
- ...



Papers – further readings...

- G. A. Baugerud, M. Powell, M. Riegler, P. Halvorsen, M. E. Lamb, S. S. Sabet, S. Z. Hassan, P. Salehi, R. K. Røed and M. S. Johnson: **Investigative Interviews using a Multimodal Virtual Avatar**, In American Psychology-Law Society Conference. Denver USA: American Psychology-Law Society, 2022
- P. Salehi, S. Z. Hassan, M. Lammerse, S. S. Sabet, I. Riiser, R. K. Røed, M. S. Johnson, V. Thambawita, S. A. Hicks, M. Powell, M. E. Lamb, G. A. Baugerud, P. Halvorsen, M. A. Riegler: **Synthesizing a Talking Child Avatar to Train Interviewers Working with Maltreated Children**, Big Data and Cognitive Computing, Vol. 6, 2022
- S. S. Sabet, C. Midoglu, S. Z. Hassan, P. Salehi, M. Riegler, C. Griwodz and P. Halvorsen: **Comparison of Crowdsourced, Remote, and Expert Group User Studies: A Case Study on Investigative Child Interview Training**, In QoMEX'22: Proceedings of the The International Conference on Quality of Multimedia Experience, 2022
- M. Lammerse, S. Z. Hassan, S. S. Sabet, M. Riegler and P. Halvorsen: **Human vs. GPT-3: The challenges of extracting emotions from child responses**, In QoMEX'22: Proceedings of the International Conference on Quality of Multimedia Experience, 2022
- P. Salehi, S. Z. Hassan, S. S. Sabet, G. A. Baugerud, M. S. Johnson, P. Halvorsen and M. Riegler: **Is More Realistic Better? A Comparison of Game Engine and GAN-based Avatars for Investigative Interviews of Children**, In ICMR '22: Proceedings of the International Conference on Multimedia Retrieval - ACM Workshop on Intelligent Cross-Data Analysis and Retrieval, 2022
- S. Z. Hassan, P. Salehi, R. K. Røed, P. Halvorsen, G. A. Baugerud, M. S. Johnson, P. Lison, M. Riegler, M. E. Lamb, C. Griwodz et al. **Towards an AI-driven talking avatar in virtual reality for investigative interviews of children** In MMSys '22: Proceedings of the Multimedia Systems Conference - Workshop on Games Systems, 2022
- S. Z. Hassan, P. Salehi, M. Riegler, M. S. Johnson, G. A. Baugerud, P. Halvorsen and S. S. Sabet. **Virtual Reality Talking Avatar for Investigative Interviews of Maltreated Children** In CBMI'22: Proceedings of the International Conference on Content-based Multimedia Indexing, 2022

