



AI for Neurodiversity & ASD personalized care

Presented by

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We see autism as part of neurodiversity, the natural diversity in human thinking and experience, with strengths, differences, and weaknesses.

In 2019, SIMC created the 1st large-scale comprehensive center in China for ASD:

The Center for Exceptional Children (CEC) in Putian.

Under one roof:

- Diagnosis and orientation
- Intervention
- Specialized boarding school education
- Residential living



For 5–18-year-old ASD children and their families.

Center opened in 2021, designed for 500 children, actually onboarding 140.

The mature model and team is originated from our partner in Switzerland, the Institution of Lavigny.

ASD : Autism Spectrum Disorder (among which the Asperger)

ASD is an incurable and complex neurological condition with 3 severity level* .

*as described in the Diagnostic criteria from DSM-5TM, the worldwide clinicians' reference manuel on mental disorders edited by The American Psychiatric Association.(Ed. Washington DC 2020).

This neuro developmental disorder mainly affects:

- Social interaction
- Communication
- Multi-sensory processing
- Cognitive skills

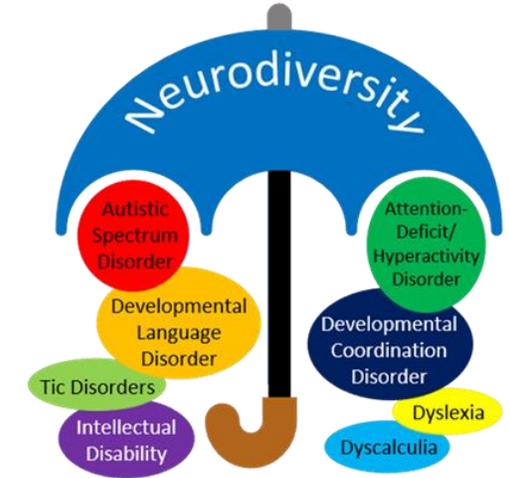
From the regulation of our 5 skills depends a possible social integration and well being:

- Cognitive
- Social
- Sensory
- Emotional
- Motor

About 1 in 100 children is affected by ASD worldwide
[Autism \(who.int\)](http://who.int)

An autistic person has peculiarities in processing multisensory information and has to deal with a whole context of unlearned norms.

Autism Awareness





Pain Points

- Scarcity of therapists
- ASD individual issues with 5 skills: cognitive, social, sensory, emotional and motor
- Lack of comprehensive data and progress monitoring
- Cost of care

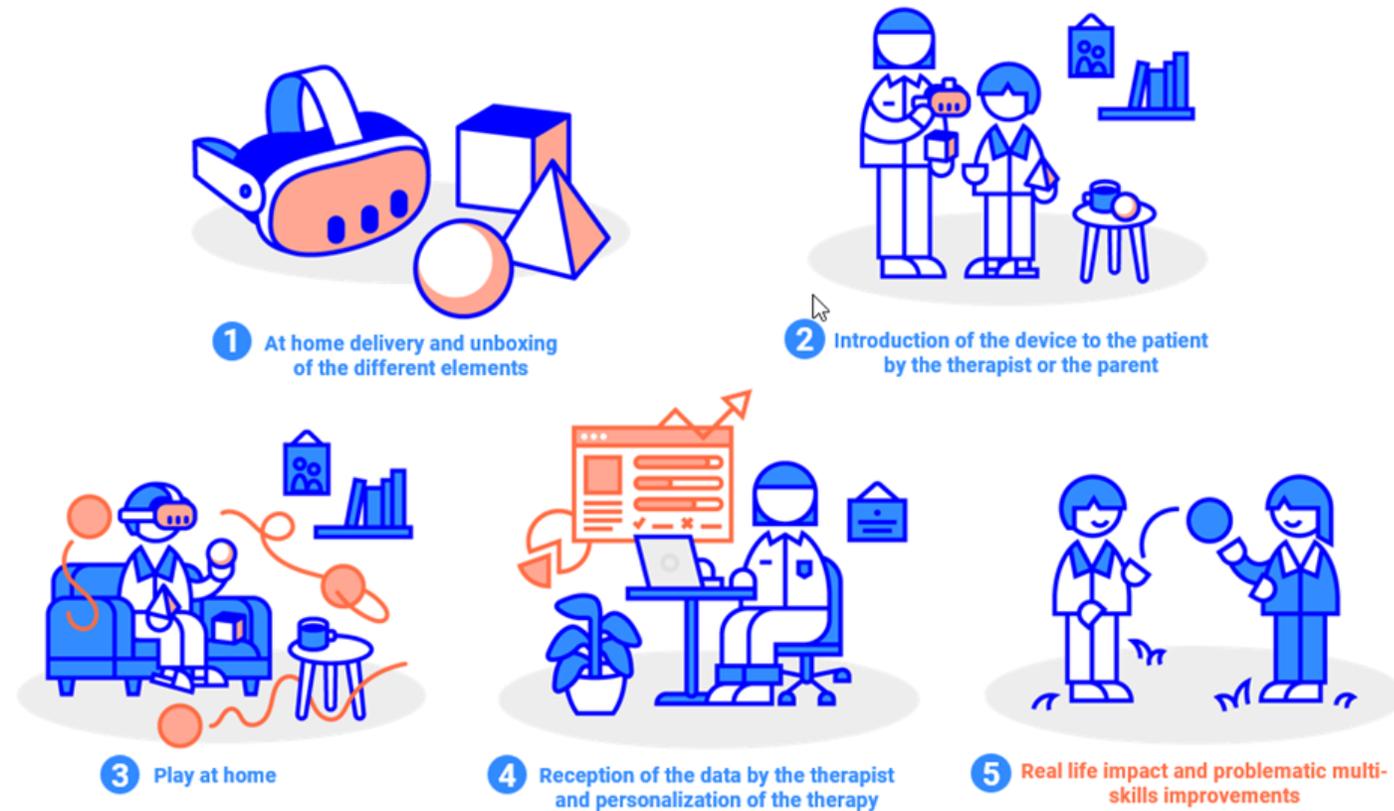


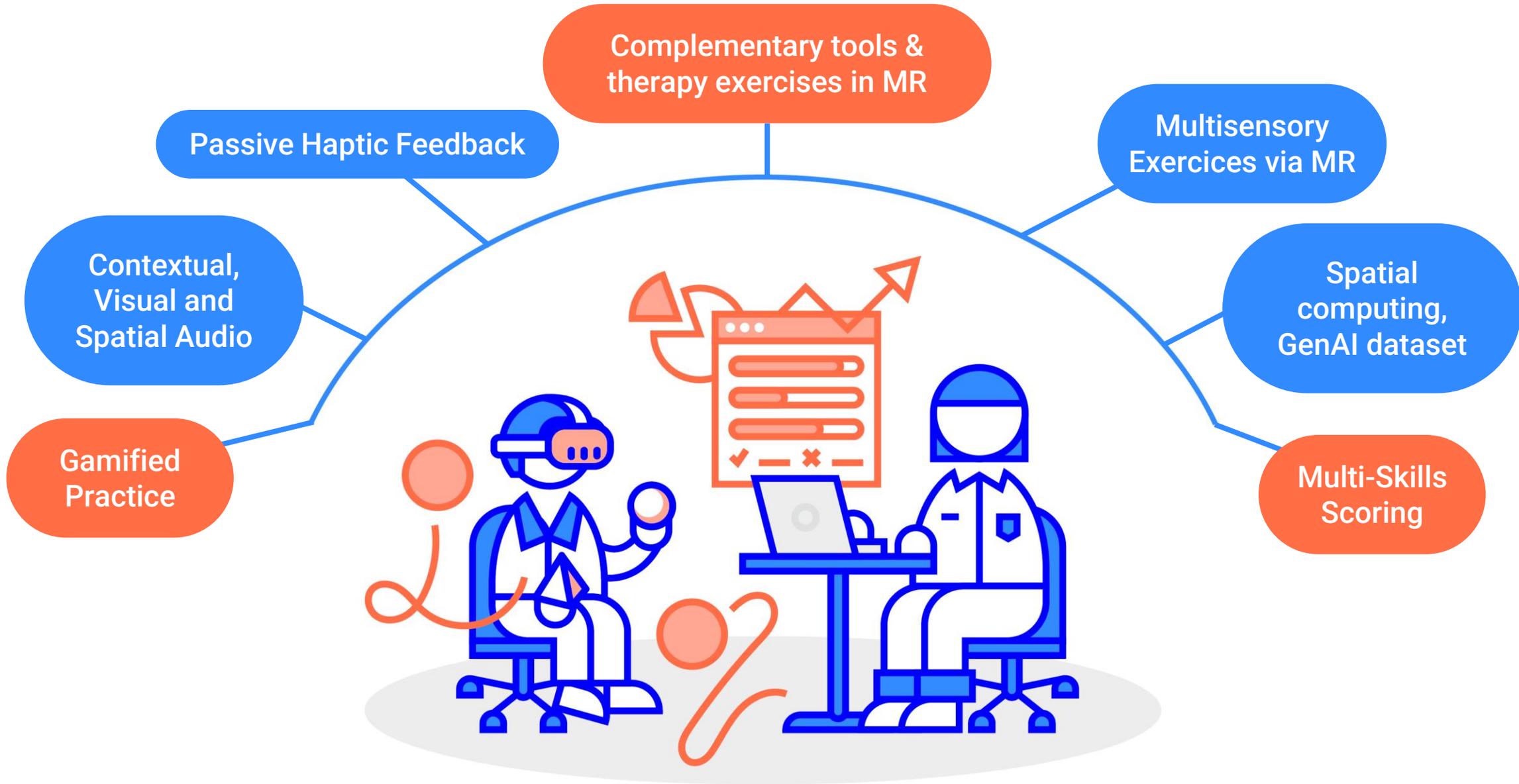
Solution - IHER

- Accessibility to complementary therapy at home, depending on patients' conditions
- **Scenarios of exercises to improve ASD/ADHD skills, leveraging strengths to work on weaknesses, self-adapted to actual state of the patient**
- Data-driven, evidence-based follow-up for a global overview of patient and personalization of therapy
- Cost-effective solution based on MR technology

Co-created with doctors, therapists and ASD, we gamified best activities for ASD . The software will collect large data from the daily living of ASD teenagers in their home.

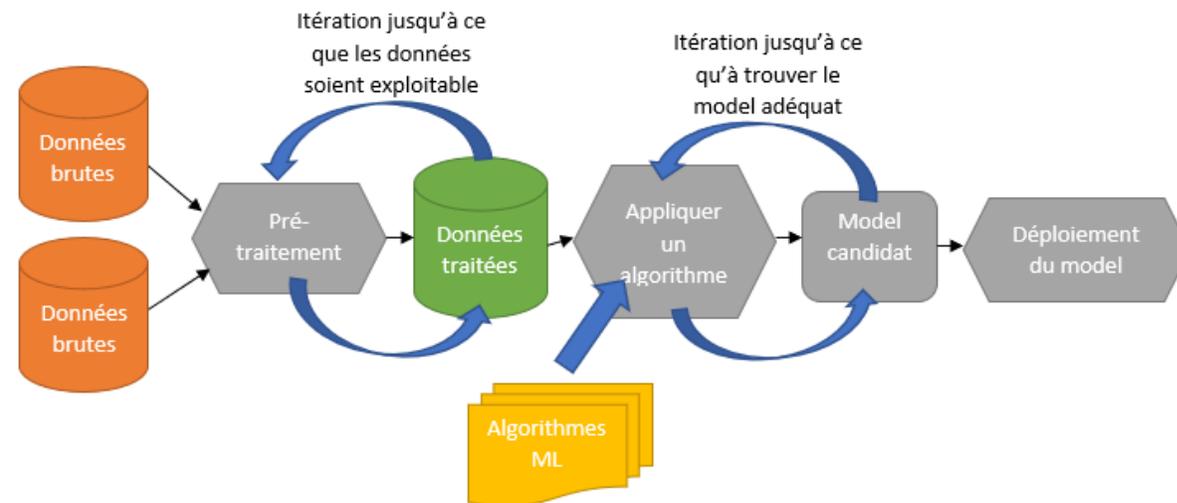
Our scenarios of exercises will improve their problematic skills, leveraging strengths to work on weaknesses and self-adapted to actual state of the patient.



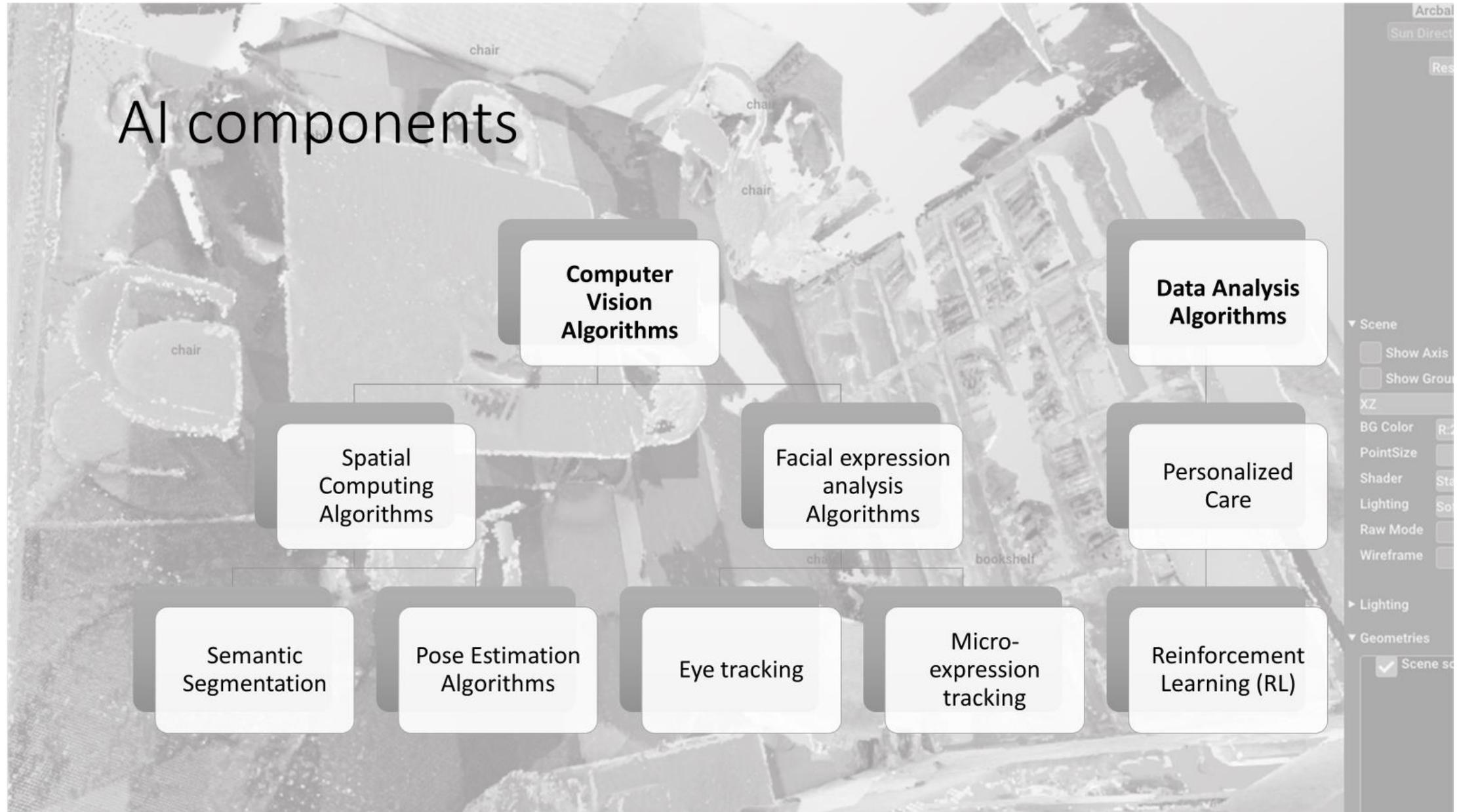


Creation of a ML platform capable of

- Securely storing data collected
- Structuring the data for use in user profiling
- Offer profiling algorithms starting with semi-automatic data annotation and reinforcement to accelerate the availability of a profiling algorithm using a minimal data set before having enough data to use more autonomous machine learning algorithms (Deep Learning).
- Dynamically modify the current activity according to the data collected in real time.
- In the long term, be able to propose a beneficial activity plan for a given user profile.



AI components



SNSF Health & Wellbeing – Starting April 2024 (30 months)

HEG Pr. A. Widmer, HET-S Pr. S. Dini

“Reducing Gender Bias in Detection of ASD Using a Co-Construction Approach with Computer Vision and Mixed Reality Exercises” – Value CHF 600K. SNSF granted Dec. 23

> DiverSSiTy SA provider of computer vision tool & software in Mixed Reality



INNOSUISSE in ICT & eHealth – Started Oct. 23 with SIMC SA (18 months)

With HEG Pr. A . Widmer, HET-S Pr. S. Dini

107.005 IP-ICT: *ITHER - Home-based and data driven therapy for adolescents with hyperactivity and/or autism leveraging mixed reality* – Value CHF 540K. Innosuisse granted Aug. 23

> To build a prototype in computer vision tool & software in Mixed Reality

> Living Lab approaches participating to clinical research frameworks in ASD

In partnership with Association Eliézer and Clinique Dis7 in Sion

Innosuisse - Swiss Innovation Agency



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Thank you for your attention

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