Hol'Autisme

PRESS RELEASE

2018 EDITION

PROJECT

Research Development Innovation

AUGMENTED REALITY | SIMULATION | DIAGNOSTIC | 3D IMAGING

DATA ANALYSIS | EMBEDDED SOFTWARE | CONNECTED OBJECTS

SUPPORTED BY

Microsoft France

CapDigital

AWARD

French IOT 2017

Our goal is to help children and adolescents with autism spectrum disorders to improve their social and life skills.

We are developing a catalog of applications displaying environments and social scenarios with mixed reality, and a control and monitoring plateform.

BACKGROUND

We want to offer an **alternative to the experiment under practical conditions of use**, too unsafe for youngsters with autism.

AUTISM: A SOCIAL HANDICAP

Autism is a severe and early development disorder that affects **1% to 2% of the world's population**, or between 75 million and 150 million people. In France, 160,000 children and adolescents are affected by autism spectrum disorders, with more than 8,000 births per year.

The main features of autism are: deficiency in the establishment of social relationships, restriction of interests, impaired verbal and nonverbal communication.

In order to improve the social skills of children with autism and help them to socialize, the key issue is **their support** by medical and educational staff.

Several learning methods exist (PECS, ABA, TEACCH...), tools such as games, videos, visual aids, puppets, context, imitation, are used. However, learning in real conditions is difficult.

OUR SOLUTION

Our goal is to foster, in a controlled and secure environment, **the acquisition of social codes, autonomy, immersion in public places.**

We develop, **in close partnership with researchers, educators and caregivers,** a diverse range of applications displaying varied social environments and scenarios.

PROJECT

A CONTROL INTERFACE

Educators can intervene **during the experiment via the interface** (tablet, computer and smartphone) **to pause or modify elements of the environment.**

It will be possible to **visualize the environment in real time via a screen in 1st or 3rd person view.**

EXAMPLES OF APPLICATIONS

- Go to the park
- Take part in a birthday party
- Buy bread at the bakery
- Cross a pedestrian crossing
- Speak in class
- Go to the supermarket
- Strike up conversation
- Take care of a pet
- Receive a medical procedure
- Improve motor skills

«We believe that skills learnt with mixed reality will be easier to transfer into the real world.»

OBJECTIVE

Improve the social, family, school and pre-vocational inclusion of young people with autism.

MONITORING TOOLS

The interface will present statistics **to measure children's progress and evaluate their behavior** during learning. Thanks to the embedded sensors, we will analyze various data (head tracker, movements in the space, speed of reaction, ECG, quantity of sweat).

To collect, visualize and interpret the data, we work with specialists in diagnostics, embedded software and statistics.

SECTORS

HEALTH

We would like to provide our solution to hospitals, specialty centers and institutions that host children with autism spectrum disorders, in Europe, the United States and Canada.

EDUCATION

The French education system suffers from a significant lack of care for children with autism. Only 20% to 30% attend «classical» schooling. We want to provide an answer to this problem, and to encourage the school enrolment of children with autism.

EMPLOYEMENT

Our project will generate jobs in the health, education and training sectors. In the long term, our solution may benefit adults with ASD (example of application: «prepare a job interview»).

RESEARCH

Thanks to the HoloLens and embedded sensors, we will collect data that will improve understanding of the cognitive and social mechanisms involved in autism.

RESOURCES

We are currently working with HoloLens mixed reality glasses. HoloLens are light, autonomous and wireless. With mixed reality, the link is maintained with reality (unlike the immersive virtual reality) while allowing interaction with holograms (this possibility remains limited with augmented reality).

COLLABORATORS

MEDICAL AND EDUCATIONAL INSTITUTE OF SAINT-JACQUES HOSPITAL (MOSELLE) EPA

The Hospital operates in the territory of Moselle East and Moselle Sud which represents a population of 500 000 inhabitants. The establishment was selected by the ARS as part of the labeling of an autistic unit of 8 children and as an outsourced competence center with an inclusion coordinator for children with autism (6-18 years old).
Educators and caregivers of the hospital intervene to write the specifications, test the device and conduct the experimentation.

GUILLAUME DUMAS - INSTITUT PASTEUR RESEARCHER

Guillaume Dumas is a researcher in social neuroscience at the Institut Pasteur, in the department «Human Genetics and Cognitive Functions». His works focuses on the synchronization of cerebral signals. At the Robert-Debré Hospital, he studies disorders of social interaction involved in autism.

RICHARD DELORME - UNIVERSITY HOSPITAL ROBERT DEBRÉ HP

The Robert Debré University Hospital is the largest pediatric hospital in Europe. Led by Professor Richard Delorme, the «Child and Adolescent Psychiatry» department provides cares, teaching and research. It has 24 hospital beds and 20 day places. The medical staff of the hospital will establish the admission criteria for children and adolescents to experience and test the device with autistic children and adolescents of the service.

ECOLE CENTRALE PARIS ENGINEER SCHOOL

We work with six engineering students to develop Hol'Autisme proof of concept. They are involved in signal processing, the Human Machine Interface and the scientific validation of the results of the experiment.

ACTIMAGE

Actimage is an SME created in 1995, located in Europe and the United States, **specialized in digital transformation**.

We have acquired know-how in the conduct of Research, Development and Innovation projects (RDI), particularly in the areas of **health** and **home automation**.
We also have expertise in mixed reality, via **our Hololize division**.

PROJET LEADER

Established in France, Germany, Switzerland, BeneLux, the United Kingdom and the United States, Actimage employs **180 people, including 10 in R&D with a turnover of 16 million euros** (2017).

SPECIALIST

in the digital transformation, around five pillars:

STRATEGY

CLOUD

INNOVATION

TECHNOLOGY

DESIGN / MEDIA

EXPERT

in the development of **mixed reality applications** via the **HOLOLIZE** division, attached to the **Actimage LABS** department.

Mixed reality applications

SAFRAN LANDING GEAR VISUALISER

Application in mixed reality visualization of landing gear (virtual models with gesture and voice recognition) to facilitate the work of Safran Landing Systems' engineers.

BENTLEY CAR CONFIGURATOR

Application to configure your car as an interactive model.

HOLOPHOBIA

Application to overcome the phobia of spiders through progressive levels of difficulty.

RDI Projects

actiHOME PROFESSIONAL

Application offering a comprehensive personal assistance service: home security, lifestyle analysis, local services, family alert.

Actimage budget: €950K.

ACTELIN

Mobile application to support diabetic patients through the recognition of dishes and treatment management.

Actimage budget: €2M.

OUR MANAGEMENT TEAM

THOMAS KLEIN
Actimage Paris Director

NICOLAS VIDAL
Hol'Autisme Project Director

JULIAN FORSANS
Head of HoloLens Division

JÉRÉMY BOISTIÈRE
HoloLens Division Project Manager

Innovation for children and young people with autism

The use of new technologies in the field of health has developed in recent years. Autistic patients, for whom human interactions are often perceived as **unpredictable and emotionally too strong, respond favourably to this type of learning**, via interfaces or holograms. Many smartphone applications have emerged, as well as projects with augmented reality and virtual reality.

ROBOTICS

The use of robots, such as NAO, LEKA, KASPAR, in collaboration with educators, especially in schools, has good results for children through **interaction and imitation**.

HELPICTO APPLICATION

provides a solution to help children with autism communicate with their environnement. It uses **IA to generate images from language sequences**.

SEE THE WEBSITE

UNIVERSITY OF HAIFA

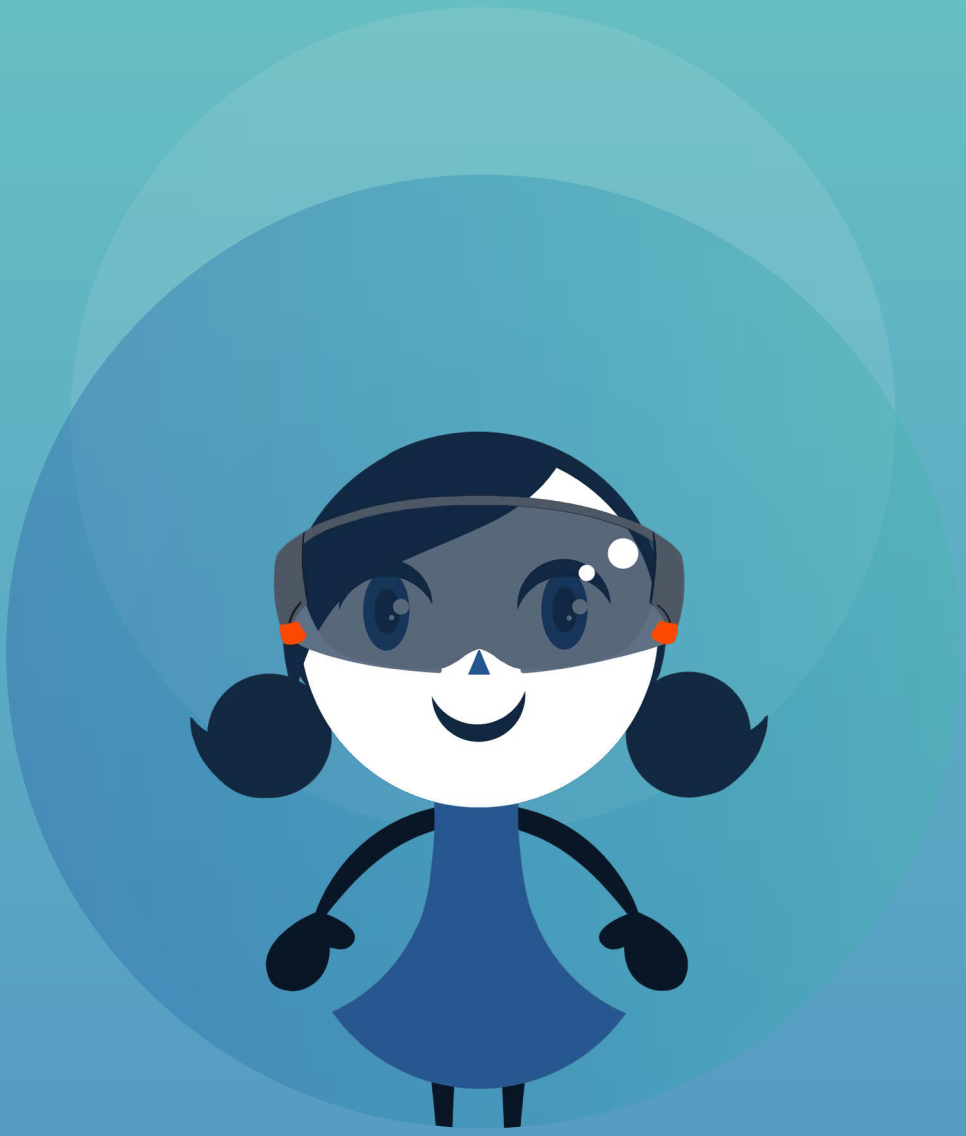
has been using virtual reality **since 2008** to teach young people with autism, in a safe environment, to cross a street.

SEE THE WEBSITE

UNIVERSITY OF STANFORD

launched **in 2015 «The Autism Glass Project»** a study program with Google Glass® to help autistic people recognize facial expressions through augmented reality.

SEE THE WEBSITE



WATCH OUR HOL'AUTISME VIDEO

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