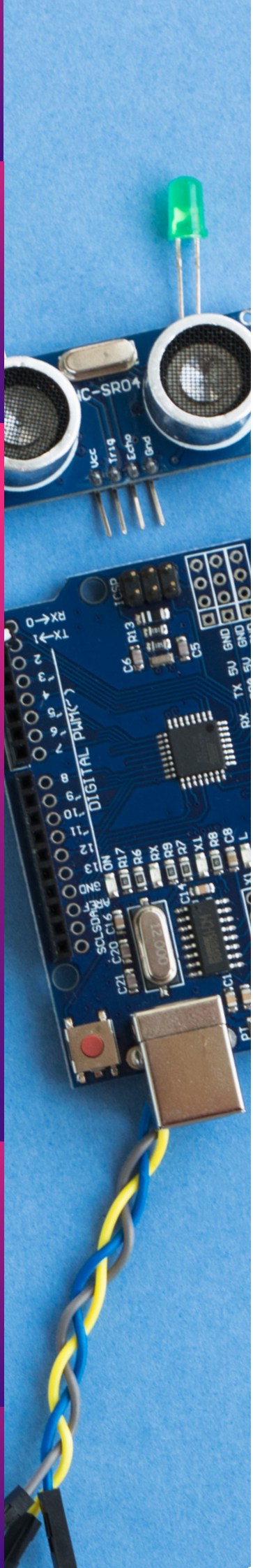

مؤسسة دبي للمستقبل
DUBAI FUTURE FOUNDATION

United Arab Emirates
CENTRE FOR THE FOURTH INDUSTRIAL REVOLUTION

WORLD ECONOMIC FORUM | A Partner of the World Economic Forum Network for Global Technology Governance

SMART TOYS AND ACCESSIBILITY

DUBAIFUTURE.AE

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1 INTRO-DUCTION

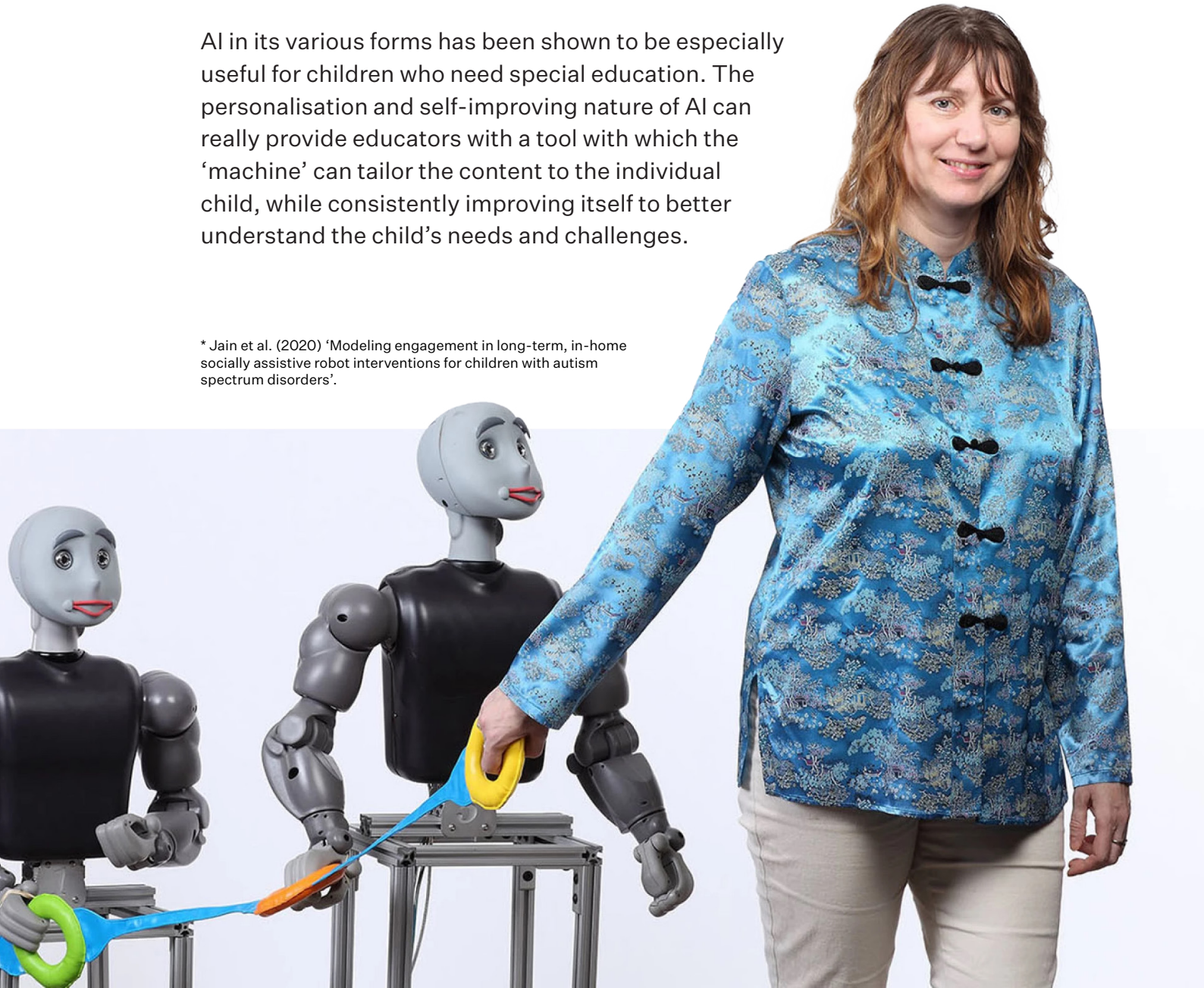
In a playground or at school we are used to seeing children playing, learning, and interacting with one another and with adults. With such vivid facial expressions and clear emotions, happy or sad or in-between, it is generally easy to understand how children's interactions change, develop, and adapt through social integration and education.

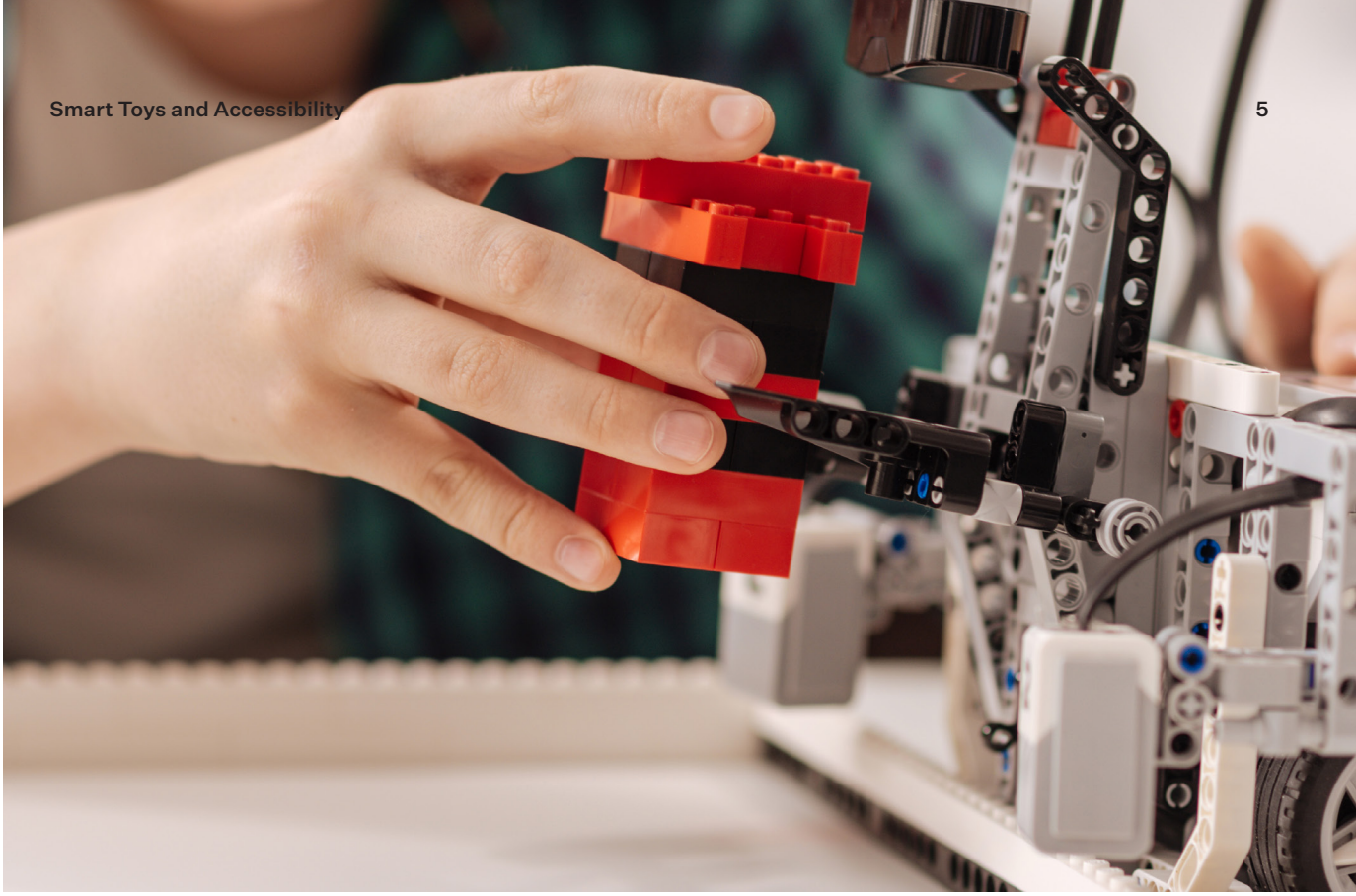
Yet, the Centers for Disease Control (CDC) in the United States estimates that 1 in 54 children has been identified with autism spectrum disorder (ASD). Children with autism can find it difficult to communicate both verbally and non-verbally, which can affect the way they learn and interact socially. While the actual cause of autism is unknown, evidence suggests that it may be genetic. Some individuals may require consistent support, whereas others may find social interaction difficult but engage socially on a daily basis. Management of ASD can be a crucial factor, together with early interventions such as speech and behavioural therapy, which have shown positive results in the improvement of a child's development.

An example of these new methods is Maja J. Matarić and her team's study at the University of Southern California, published in 2020 in *Science Robotics 5 (39)**. Matarić and her team created a machine-learning model that uses audio and video data, such as dialogue and eye contact, interactions between children with autism and robots to predict whether they are engaged in a given activity. Matarić believes that for children's development they need to learn in a social setting, but, given the difficulties with social integration and communication, children with autism do not always get that opportunity. However, playing with the robot improved their empathy towards their peers. Matarić found that many children incorporated the robot into their own family's social circles, which in turn helped the children become more actively engaged with both siblings and parents, validating Matarić's premise that the socially assistive robots can actually improve rather than replace existing relationships.

AI in its various forms has been shown to be especially useful for children who need special education. The personalisation and self-improving nature of AI can really provide educators with a tool with which the 'machine' can tailor the content to the individual child, while consistently improving itself to better understand the child's needs and challenges.

* Jain et al. (2020) 'Modeling engagement in long-term, in-home socially assistive robot interventions for children with autism spectrum disorders'.





BENEFITS OF USING AI IN EDUCATION

PERSONALISED EDUCATION FOR EVERY CHILD

The opportunities for AI-powered applications, or tools such as robots, in education mean highly personalised learning support and entertainment for children. With these personalised tools and methods, children can learn at their own pace, outside of school, while enjoying the process. This supports the learning they receive from their teachers and tutors, and provides them with opportunities to practise their skills outside of the educational environment. Additionally, they can continue learning wherever they want without time constraints.

INCREASED ATTENTION SPAN

Using an AI-powered application can assist the traditional educator in actually increasing the child's attention span. When looking at the results of studies using AI-based educative applications, it can be seen that, by attracting children's attention and increasing the duration of concentration through different forms of play and stimulation, technological education can actually help children increase their focus, comprehension, and learning.

DIFFERENTIATION AND INDIVIDUALISED SHAPE

AI-powered tools can help children with special needs reach their full potential through individualised training and a greater focus on areas where they specifically need support. Through pattern recognition, AI is able to determine where a child constantly struggles and where they excel by analysing their tests and responses. Through this analysis, AI is able to alter the curriculum provided and tailor it to the needs of the individual child. In addition to shaping the process of learning, these tools can also help parents and teachers monitor the improvement of their children and students.

HOWEVER, AS WITH ALL NEW TECHNOLOGY, THERE ARE CHALLENGES, PARTICULARLY WHEN AI IS USED WITH CHILDREN AND ESPECIALLY CHILDREN WITH SPECIAL NEEDS. THESE CHALLENGES CAN RANGE FROM PRIVACY AND SAFETY CONCERNS TO DEPENDENCY AND NEGATIVE COGNITIVE EFFECTS.

CHALLENGES OF USING AI IN EDUCATION

PRIVACY AND SAFETY

Given that children do not have the legal right to consent to any data privacy regulations, there are clear concerns when a child interacts with an AI-powered tool, including what data the child provides, facial and voice recognition concerns, and security concerns in terms of sharing private details such as location, age, and income. There are also concernsabout the potential for the tool to be hacked into, which could put children in dangerous situations.

ACCESS

Although AI-powered tools may provide a more cost-effective approach to tutoring, the current educational tools on the market are not all affordable. This means that not all children have the same access to these tools, nor do they have the same opportunities or results. This income divide can then lead to a greater educational divide.

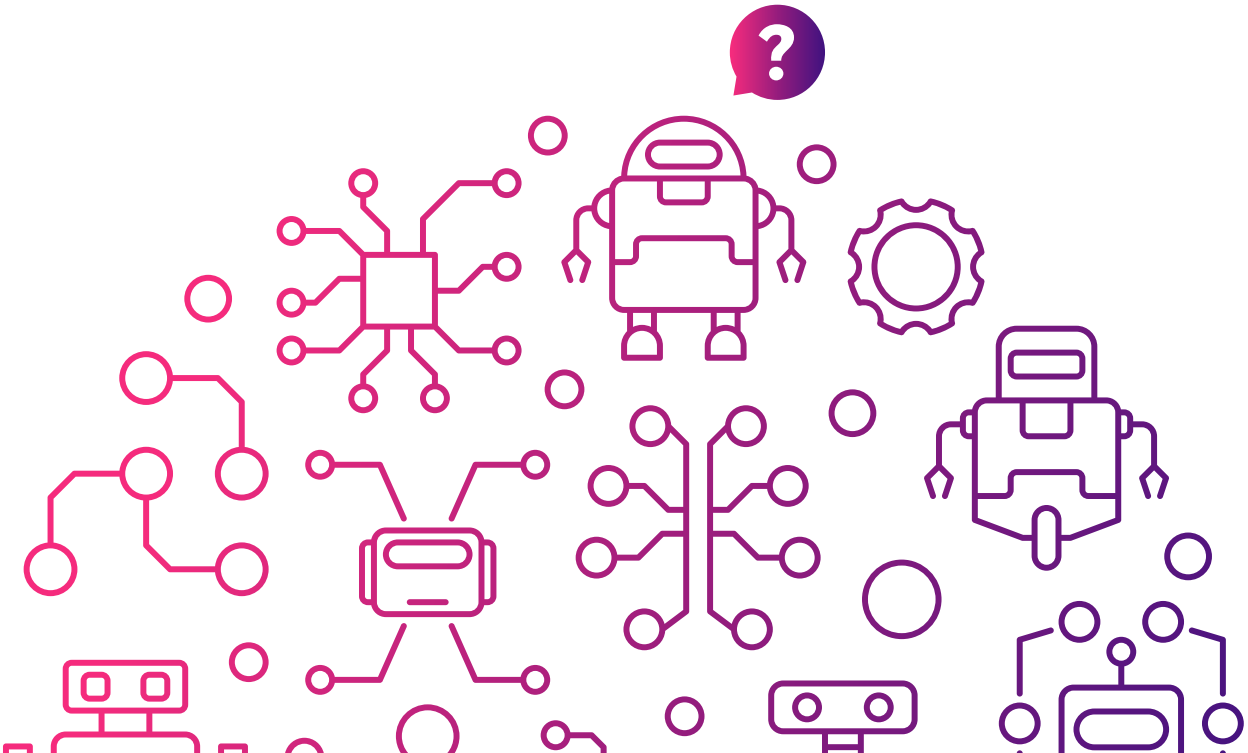
DEPENDENCY AND COGNITIVE IMPLICATIONS

One of the other major concerns for children with special needs is their dependency on AI-powered tools. Studies have shown that technology addiction is real and on the rise. If a child is used to receiving care or educational support from an AI-powered tool, they may become attached to it in the same way that a child may be attached to a teddy bear or another such toy. If this tool were then to break down or malfunction, this could lead to possibly dangerous side effects in that a child might have developed a dependency on the tool and have reduced social interactions. Indeed, there have been studies suggesting that technology can have negative cognitive implications or effects. If a child's only interaction is technology, could this decrease social interaction or lead to further isolation and loneliness?

These questions, and others, around the impact of AI on children led to the development of a programme under the auspices of the World Economic Forum called **Generation AI.** With children becoming digital natives at such a young age, and therapists and educators now utilising technology, including AI, to support learning development, questions around privacy, dependency, and the mind are even more necessary, particularly when the user is below the age of 18.

With no clear regulations around the use of AI by and for children, the **UAE Centre for the Fourth Industrial Revolution** (a collaboration between the Dubai Future Foundation and the World Economic Forum) joined the Generation AI programme to work alongside WEF and partners to develop clear guidelines around the use of AI by children. As part of this process, the Centre hosted the Smart Toys Competition, as part of the Smart Toys Award, in collaboration with the World Economic Forum, with partners from the Abu Dhabi Early Childhood Authority and the UAE National Programme for Artificial Intelligence to identify and highlight companies that have 'smart toys' (AI-based tools) that support children's learning development while also protecting their privacy.

The winner of the competition will be given the opportunity to develop their product further, trialling the robot with the programme partners, and ensuring that the smart toy continues to fulfill the ethical guidelines in place to protect children from the potential dangers of AI. Through this trial, the Centre will develop clear guidelines for the UAE on how to utilise AI for children, and raise awareness around the benefits and challenges when trialling fourth industrial revolution (4IR) technology.



THE PROGRAMME FOCUSED ON FOUR PILLARS

P R O T E C T

Does the technology protect children from harm?

Security protocols developed to ensure data protection and privacy. Complies with children's rights.

Use of collected child data and provided content is **Transparent** and ensures child's data is used only for the purpose of improving the toy. Parents can opt out of expanded data use.

Flexibility of choice by allowing parents to opt out of certain aspects, such as facial and voice recording, providing that it doesn't impact on the beneficial influence of the toy's quick repair mechanism.

E M P O W E R

Does the technology empower and inspire diverse users?

Accessible and inclusive to children of determination. Can be altered and adjusted to fit different needs.

Adjustable to fit the developmental stages of a child.

Flexibility in control, whether by a caregiver or put into an autonomous state for the child to use.

B E N E F I T

Does the technology benefit and educate the children?

Fact-checked by educational experts. Ensures unbiased content that is adjustable to fit parent's values.

Focuses on aspects such as: critical thinking, creativity, curiosity and social-emotional bias.

Helps with improving social interaction.

C O M M U N I T Y

How does the technology help build community and bring us together?

Helps in **family bonding** by bringing families together.

Affordability of the toy.
The smart toy contributes to the fields of:
- Health & Nutrition
- Family Support
- Child Protection
- Education & Early Care

THE FOLLOWING COMPANIES APPLIED

JADE AUTISM

UAE

Jade Autism is a game-based platform that provides behavioural data for better therapy and education decisions for children with autism spectrum disorder, ADHD and Down's syndrome. The platform has 1,500 different levels of games, divided into 6 categories, where the child is stimulated cognitively, using the Discrete Trial Teaching methodology. Jade has a technology in the background that allows it to collect the child's behavioural data during the game. This data is processed and becomes the prognosis and performance reports for professional use. With this data the professional is able to assemble an individualised approach enabling better results for the child in the short and medium term, potentially making a great difference for the professional and for the families. Today Jade is used by 95,000 families in 179 countries, serves several therapeutic and educational institutions, and has to partnerships with the governments of the United Kingdom and Brazil. Jade Autism was the champion of the Gitex Future Stars in 2020, in Dubai, recognised as the most disruptive start-up in the sphere of education and technology for that year, among other 73 startups out of 30 countries.

https://jadeautism.com/en/who-we-are/

VRAPEUTIC INC.

EGYPT

VRapeutic

VRapeutic is an Ontario-based, UNICEF Innovation Fund portfolio software house, specialising in the development of therapeutic and rehabilitation solutions, with a focus on virtual reality (VR) for learning and developmental challenges.

VRapeutic's product comprises a library of rehabilitation VR modules that are specially tailored to instill essential life skills in children. Beyond the confinement of classical therapy rooms and the limitations of conventional training methods, VRapeutic empowers therapists with unlimited, AI-enriched virtual training scenarios that are otherwise impossible to realise during sessions. VRapeutic also empowers specialists with cutting-edge technologies to track and analyse children's performance and to design data-driven therapy plans. Using VRapeutic's modules, children get to engage with rich rehabilitation contexts that enable them to develop cognitive, social, academic, and even motor skills. Currently, the library contains seven modules that address attention skills for children diagnosed with ADHD and autism, all designed based on the TOVA test, and measure impulsivity, distractibility, omission, and other variables from within the VR environments. Initial results showed an average of 40% improvement in the Attention Performance Index using our modules.

In their short journey, VRapeutic has been honoured to be chosen as a partner with renowned entities and organisations such as UNICEF through its Innovation Fund, the Ontario Brain Institute through its ONtrepreneurs Programme, and the University of Ottawa through its MakerLaunch Programme.

https://drive.google.com/file/d/1vYlWFjg9cmZS8g9_bith_ZRkUTHDZdJf/view

BLUE FROG ROBOTICS

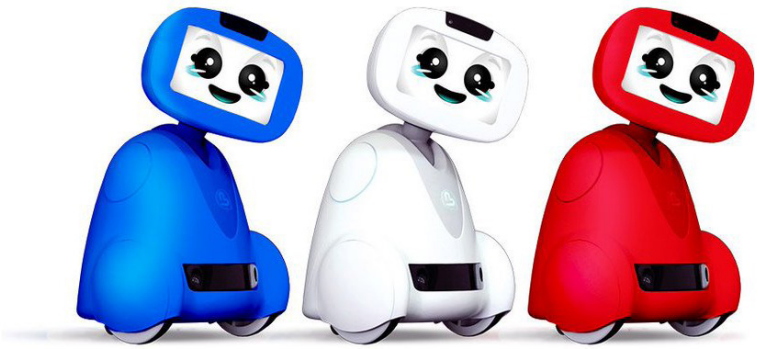
FRANCE

With its unique charm, this adorable companion improves everyone's life and, more particularly, helps to create social links, supports childhood learning and watches over and takes care of our elders.

With a CES Best of Innovation awards, Blue Frog presents itself as a 'Tech-for-Good' company that embodies Emotional AI to drive significant positive impacts on major social issues, such as ageing populations, inclusion of vulnerable people, and of course education.

The company has recently been awarded a contract to use its Buddy Telepresence Avatar robot in the French Government's fight against the isolation of homebound and hospitalised children who are unable to physically attend school. It has so far been used in nearly 2,000 schools, allowing the preservation of an essential link to learning.

For children with autism spectrum disorder or pervasive developmental disorder, Buddy can provide help as no one else could and support children and their care givers, whether family or professional. Beyond just being a simple reinforcer, Buddy brings a real added value because the robot can be used as a working tool offering interactive activities that are fun as well as educational. The use of an expressive and engaging robot such as Buddy encourages the child to learn social interactions and give them confidence. This emotional dimension is something that inanimate objects, such as computers or tablets, cannot provide.



MEET BUDDY, THE EMOTIONAL ROBOT DEVELOPED BY THE FRENCH START-UP **BLUE FROG ROBOTICS**

How does Buddy work?

Technologically speaking, Buddy is a complex mechanism, provided with the means to perceive its environment and the ability to move and interact autonomously with a high level of emotional artificial intelligence.

On the hardware side, Buddy is a 60cm mobile robot with two motorised wheels, an articulated head, and incorporating numerous sensors and cameras. It operates with a touch pad which serves as a face and 'brain'. Buddy can hear and speak thanks to built-in speakers and a microphone array system, and its emotional artificial intelligence engine allows the robot to react autonomously according to what it detects by generating behaviours adapted to the situations it encounters.

As the technology advances with giant strides, Buddy is intended to be dynamic, not sclerotic. Blue Frog provides an intuitive software development kit (SDK) based on Android which allows third-party vendors to create innovative applications and distribute them from the Blue Frog store. In addition, as Buddy has several zones with 'electro-mechanical' connectors in which accessories can be plugged, developers will be able to build custom hardware-based solutions such as arms, docking station, and so on.

Finally, Buddy replaces the technology's complexity in favour of useful services and richer interactions with loved ones while enhancing the quality of life for all ages.

Make Robot-for-Good a reality, this is our vision.

https://youtu.be/YjYuXXqcsRk

NUWA ROBOTICS

NUWA ROBOTICS

TAIWAN

NUWA Robotics, with its partners Foxconn and Xiaomi, provides an AI-powered social robot and development platform to create an interactive learning and playing experience for children.

The company specialises in the integration of hardware and software solutions. To date, NUWA Robotics has sold over 10,000 robots in Taiwan, Japan and Korea since the robot launched in December 2019. More than 600 schools in Taiwan use this robot for STEAM (science technology engineering arts and mathematics) and language education in classrooms.

NUWA Robotics believe AI and body language will enhance the reality and intimacy of human–robot interactions, and robots will become not just tools or devices but reliable assistants and friends with whom you can share all your thoughts and feelings. They believe it's their mission to build a relationship between humans and robots that will become more emotionally and intellectually profound.

Kebbi plays a very important role as an educational robot. Kebbi was designed to act as a teacher and playmate for young children. The robot is equipped with a computer monitor screen that displays learning materials, videos, and games, and can entertain children with singing and dancing. The latest built-in STEAM education programme is Kebbi's key feature. With user-friendly interface and more coding curriculum, Kebbi is a great application for STEAM education. Indeed, the capability of AI functions such as facial and speech recognition are integrated with a coding curriculum that brings a different learning experience for children. In light of the pandemic, the company quickly responded by adding a temperature sensor to Kebbi that can detect the child's body temperature. The new feature has received positive feedback from the market.

NUWA has now adopted a market-expansion strategy in Taiwan, Japan, Korea, and China.

https://youtu.be/EFsg-ThWSIg

BUILT 2 ENTERTAIN

UNITED KINGDOM

The Alpha-Pad is an educational ‘toy’ targeted at three-to seven-year-olds that helps children with writing, reading, phonics, maths, telling the time, and other fun educational tasks independently. It uses colour-changing LED lights and adjustable perforated grooves (skill level dependant) that guide the magnetic pen in performing the tasks. It gives the child a much better understanding of how to write and focuses and helps to define their pen-using skills and eye coordination.

Its unique style and onboard AI takes into consideration the abilities of children with learning disabilities; it encourages them when needed and congratulates them regardless of the effort.

Magnetic pen with LED Lights

The pen and LED lights are vitally important to the manner in which the Alpha-Pad functions: for example the LED lights flash ‘green’ in the direction of how a predicted letter is formed or written. The magnetic pen ensures it is written to the correct standard, for example that the letter ‘S’ commences at the top and goes downwards; if the user attempts to start at the bottom, as some children do, the LEDs will not change colour and will continue to flash ‘green’ in the correct direction. After some 10 seconds the AI will ask the child if they require further assistance; if they press the ‘Yes’ button the AI will guide them accordingly. If the child stops halfway through completing the letter, the incomplete part of the letter will continue to flash ‘green’; once the letter has been completed correctly the letter will flash ‘red’, indicating completion.

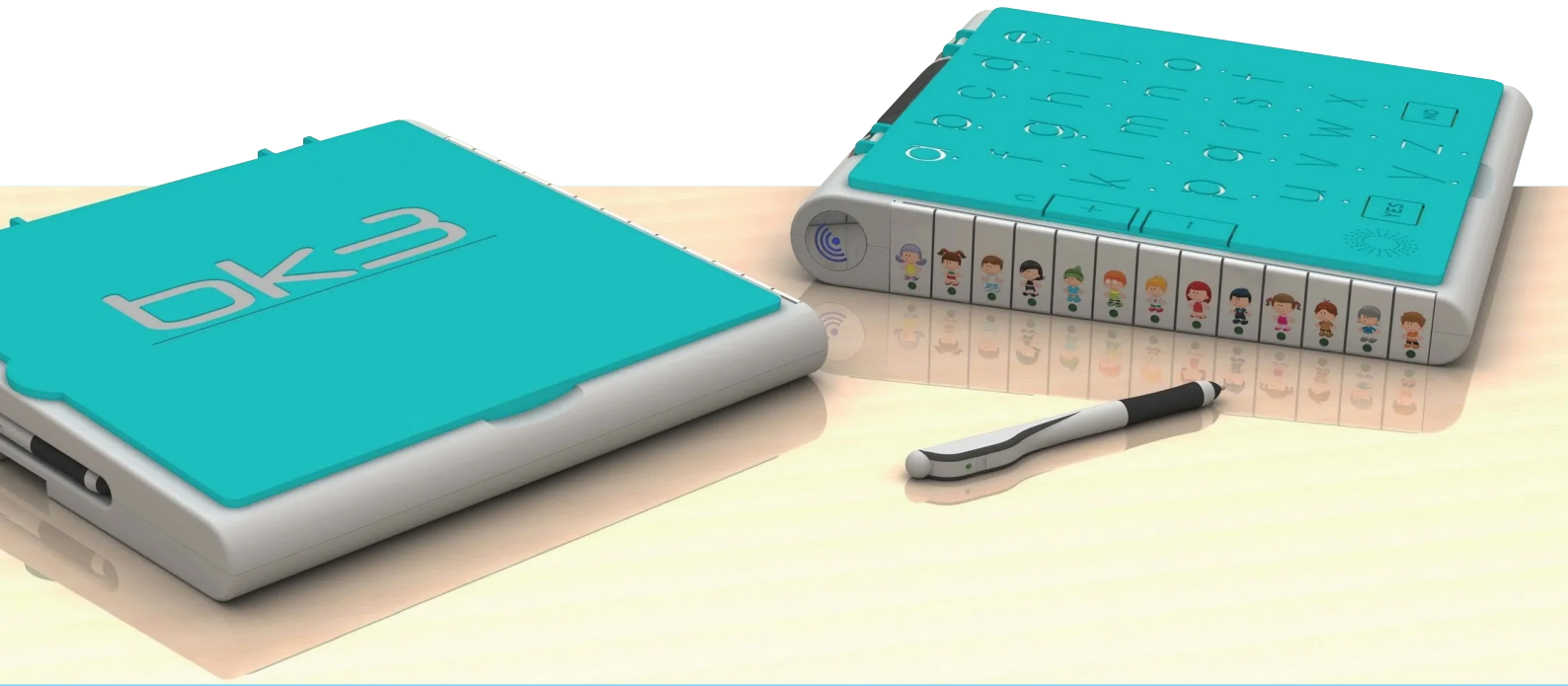
The perforated groove

The groove is adjustable to suit the child's ability: how does it work? Depending on their confidence, the child can change the depth of the groove by using the wheel: a deeper groove makes the task easier, keeping the magnetic pen on the correct course; a much shallow groove makes it harder to stay on the path but ultimately assists the child in trying to perfect each task.

The removable or replaceable template

The top templates are all removable. Once placed their inform the base which template has been activated: each template houses a new task. New tasks for each template can be uploaded via a webpage and will be designed to challenge improved users after each mastered task.

https://built2entertain.com



AMAISYS TECHNOLOGIES SLU

SPAIN

ARTIFICIAL INTELLIGENCE TOYS FRAMEWORK TO IMPROVE THE PROGRESS OF **TEACCH METHODS**

RAINA is an artificial intelligence toy framework that uses the TEACCH method and helps children with autism spectrum disorder and communication disabilities using visual communication and audio elements in order to encourage independent learning and growth.

Why use RAINA

TEACCH (treatment and education of autistic and related communication handicapped children) is a programme based on evidence that autistic individuals are visual learners, so educators must correspondingly adapt their teaching style and intervention strategies. RAINA is designed to support children and educators following four of the five principles of the TEACCH method: consistent schedules, the establishment of expectations, maintenance of a routine, and implementation of visually based cues.

How it works

Children, using the visual support of cards, combine the snap-magnetic blocks to resolve the activity. During the activity the robot tracks in real time the facial expressions and the assembly of magnetic blocks. Based on these inputs, the IA module recognises the child's emotions related to the activity result.

The robot is able, therefore, to reinforce the correct path using sounds and images and to support the children in the construction process. All the collected data is anonymous, non-intrusive, and non-personal, ensuring the protection and promotion of children's rights in a responsible and ethical manner.

Educators have technical reports about each child's progress that can be used to customise their learning process. The magnetic blocks can be used with multiple activities, helping to develop the child's skills such as logical thinking, writing, and so on.

Parents and educators can customise the pre-configured activities or develop their own to adapt to the child's learning needs, giving them encouragement when they are struggling and positive reinforcement when they succeed.

Framework components

RAINA includes:
- an interactive robot with a camera an IA module;
- colour-coded, plug-and-play, snap-together magnetic blocks; and
- a set of predesigned visual cards.

https://youtu.be/v3zSnGYstjU

VAN ROBOTICS INC

UNITED STATES

Meet ABii. ABii is an innovative social robot platform which helps to accelerate the learning of maths and reading with personalised, in-class tutoring for primary school students. ABii adapts to student attention and performance to improve the engagement and close comprehension gaps for students with varying levels of skill and focus. The robot uses machine learning to adjust each maths or reading lesson, in real time, to accommodate individual student needs. In addition, ABii builds a historical user profile and uses a recommendation engine to guide students to specific lessons that can help close gaps in comprehension.

https://youtu.be/j5UolBt267E

SMART LIFE ROBOTICS

POLAND

KODI 2.0 ROBOTIC TEACHER'S ASSISTANT

KODI 2.0 is a robotic teacher's aid, but it also can perform various tasks autonomously teaching a child in a home environment. It comes with desktop, mobile, and even VR applications that accompany educational processes and allow the child to control the robot in multiple dimensions.

KODI 2.0 is equipped with artificial intelligence algorithms:

face, emotion, and object recognition

Movement recognition

Speech recognition and synthesis

Additionally, Smart Life Robotics uses artificial intelligence so that the robot learns and develops with the child, adjusting its behaviour and educational processes to the history and progress of the child. Some of the algorithms are executed off-cloud, which makes the technology safer because it doesn't transfer sensitive data to the cloud. KODI 2.0 has high expressiveness, in facial expressions as well as in body movements. Thanks to this the robot can successfully communicate emotions to a child and build friendly and trustful relationships.

Interactions can be personalised to a particular child, repeating and tailoring vocabulary, etc., adjusting automatically to the pace of learning. There is an embedded customised automatic speech recognition engine (ASR) for children with special needs. In addition to education, KODI 2.0 can be used for therapeutic applications and in support of children's cognitive and developmental processes. There are various educational applications: language skills, communication, STREAM, and AI literacy.

KODI 2.0 uses AI in three key areas:

- information processing (face, emotion, object, speech recognition);
- communication (speech synthesis); and
- learning the child's behaviours and personalisation (using reinforcement learning and probabilistic programming).

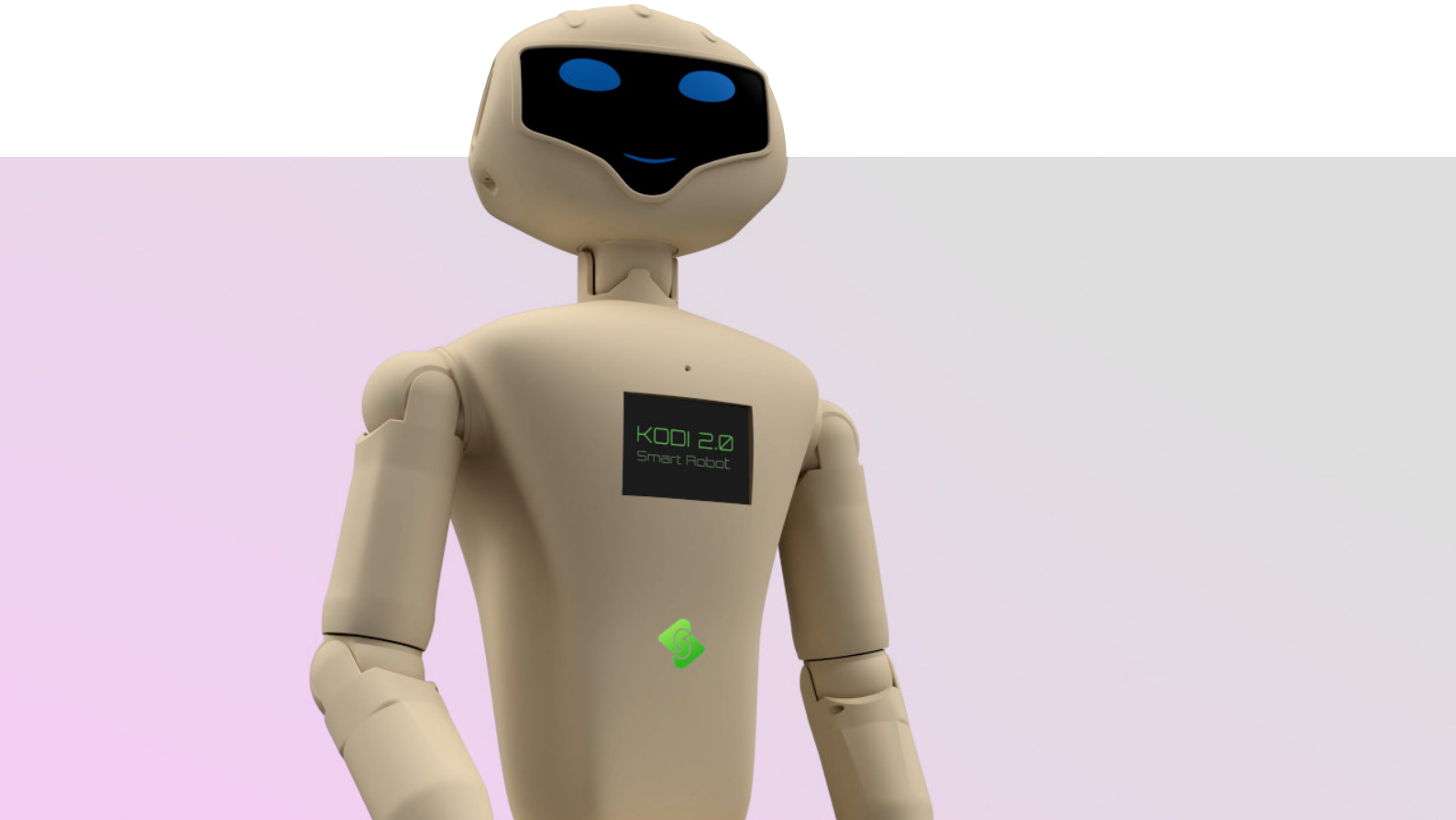
The algorithms are built by combining the AI on edge and cloud solutions. Smart Life Robotics is working on moving the entire solution off-cloud to ensure the highest degree of security and safety for children. Educational processes are carried out through interaction between the robot and the child, with or without extra support from a teacher. During various learning scenarios KODI 2.0 will be speaking in multiple languages (where appropriate), move hands, head, and body to appear more natural as well as show educational materials on the display.

During the learning process KODI 2.0 will be collecting data about the child's progress as well as some behavioural data about their interaction. This data will be secured and processed primarily off-cloud (for privacy) and used for personalisation algorithms.

Only parents, guardians, and teachers will be able to access the data, with proper authorisation process. For children with special needs, KODI 2.0 will be equipped with additional sensors to ensure safety and increase natural interactions with those children.

KODI 2.0 will have different features and educational content tailored to the specific age group and skills level.

https://smartlife.global/go/kodista



ROYBI ROBOT

USA

In a world that regards education so highly, we have yet to make a real impact on early childhood education. This formative period is where the child absorbs most information and builds a foundation that will carry them through life. Our current education system lacks personalisation of information for children while at the same time there are over 250 million children at risk of not reaching their full potential by age five.

Named by TIME Magazine as one of The Best Inventions in Education, ROYBI Robot is an AI-powered educational robot for children aged three and over. ROYBI Robot closes the gap in the education system and helps children with language acquisition, communication skills, and problem-solving. It comes with over 500 lessons, 70 categories and topics, and over 70,000 words in its vocabulary.

ROYBI is the only robot in the world that has an automatic speech recognition engine (ASR) that was developed primarily for children with privacy in mind. Our patented technology has been in the making for over five years. It includes over 3,500 hours of machine training as well as Edge AI (one-device recognition) to allow the robot to interact with children even without internet connectivity.

AI technology within ROYBI Robot allows for voice and facial recognition, which are essential features of an educational robot. Equipped with these capabilities, child and robot can have conversations and respond to each other through voice or the robot's awareness of the child's emotions. These features are especially beneficial for ROYBI's interaction with children because the robot as a physical and toy-like object can engage a child in activities that can lead to the development of important skill sets such as play, conversation, and social interaction abilities.

ROYBI's platform guides parents and teachers with its automated or pre-developed content rather than just having conversations. The AI helps create progress reports where parents or educators can track the material and better understand their child's development.

ROYBI's platform is firmly grounded, not only in cognitive development but also in social-pragmatic, interactive principles of children's learning. ROYBI promotes active language learning beyond vocabulary and phrases towards developing meaningful, ecologically valid communication skills.

ROYBI continuously analyses children's speech, including taking turns and vocabulary acquisition, getting to know each child's unique communicative behaviours and skills across languages. As a result, ROYBI can grow individually with each child, sensitively tailoring its teaching to their specific needs over time.

https://youtu.be/CmAXduYGzFc

SIDEKICKS.AI

USA

Sidekicks.ai, the world's first holographic AI assistant, is launching on Kickstarter, bringing to life a level of interactivity, intelligence and personalisation not previously seen from an AI assistant. Sidekicks.ai uses a unique and fun way to introduce you to your Sidekick. Users start by taking a personality test to ensure that their Sidekick understands their interests. It will then begin as an egg and enter a 'nesting period' until it hatches.

From there, the more its owner engages with it, the more it will learn, and the more proactive it becomes. For example, Sidekicks will learn and play your favourite soundtracks when you get home; suggest an event to fill a gap in your schedule; or, if you love cooking, recommend a new dish to try for dinner.

To ensure the AI doesn't pick up any wrong behaviours, Sidekicks.ai includes a layer of human inspection called 'mixed intelligence'. This ensures that any inappropriate habits and content are filtered out, making Sidekicks.ai perfect for families and children. Sidekicks are also built with full privacy options. Your data stays on your device, except for the information you provide to complete the tasks you need to do.

Sidekicks.ai also comes with the Sidekicks Exchange. This online marketplace allows approved third party providers to create and sell their own applications-tested and approved by the Sidekicks team - that can be purchased and downloaded by other users. This ensures new and exciting updates and functionality on a regular basis, including new characters, accessories, courses, languages and more.

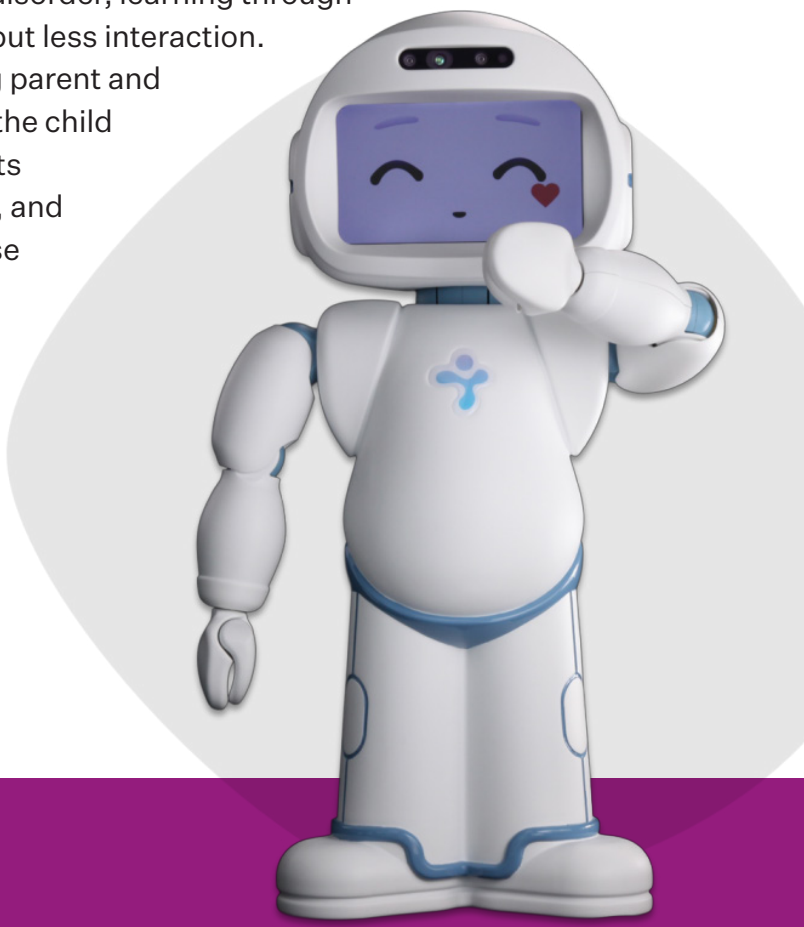
https://www.sidekicks.ai

WINNER OF THE SMART TOYS AWARDS
CATEGORY FOR A SMART TOY FOR CHILDREN OF DETERMINATION

LUXAI
FRANCE

QTrobot is an expressive social robot, designed to make learning more interactive for children and teaching more practical for parents. Also, children with autism spectrum disorder can miss out on learning opportunities in two ways. Firstly, because they are less attuned to social interaction than other children, they can find classroom and 1:1 tutoring challenging and anxiety inducing. Secondly, many autistic children may have strong vocabulary or skills above their age level but lack the social abilities to use these skills effectively.

New technology means children can learn in ever more visual and appealing ways. Multimedia devices now mean the world is quite literally at your fingertips and on your screen. However, for some children, such as those with autism spectrum disorder, learning through technology can mean more learning but less interaction. QTrobot bridges this gap by involving parent and child in a teaching triangle, meaning the child answers a question from QTrobot, gets feedback from both robot and parent, and gets frequent opportunities to practise these skills with the parent.



QTrobot has a fun physical form, designed to engage children and meet the needs of children with autism. The LCD face screen displays simplified emotions to reduce the amount of information the child needs to manage. Its movements convey enjoyment and emotion but are predictable and not rapid. Underneath the jolly exterior, QTrobot packs a lot of educational and computing power. QTrobot comes with pre-installed curricula containing over 120 separate games. Parents receive individualised advice on where to start within each curriculum, and QTrobot's progress monitoring suggests games to play based on what the child has learned or may need to revise. QTrobot delivers prompts and reinforcement within each game depending on the child's performance. This means every play is different and QTrobot becomes even more interactive as the child's independence improves.

The adaptable teaching platform and the parents' involvement mean QTrobot is not just a technological teacher, it is also teaching skills for life.

Parents are always in the loop with the robot's lessons, and the child is always getting social interaction and reward from parents and robot.

QTrobot teaches important information in established ways and does this without the need for extensive parent training.

QTrobot offers a simplified version of child-to-child interaction that allows the child to learn interactively while also getting the repetition and predictability they need to make progress.

FEATURES

- Fun physical form
- Assessment tools
- Curricula based on developmental milestones
- Teaching based on behavioural methods
- Progress reporting
- Games adapt to the child's responses – the level of difficulty moves up and down within a session

https://www.youtube.com/channel/UCAY0H0HaqQL1GE7lO_iSpbg

ABOUT DFF

Launched by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, the Dubai Future Foundation was established in 2016 to play a pivotal role in shaping the future of Dubai, as well as to collectively imagine, inspire, and design the city's future in collaboration with the government and private entities within various industries.

Mandated in positioning Dubai as a hub for innovation and a leading city of the future, the foundation's main areas of focus are Future Foresight and Imagination, Content and Knowledge Dissemination, Capacity Building, Future Design and Acceleration, and Future Experiences.

DFF builds bridges between government and the private sector, innovators, startups, talents, and industry experts, and creates an innovative ecosystem that enables innovations to take shape, promotes global dialogues, builds partnerships, and cultivates disruptive mindsets.

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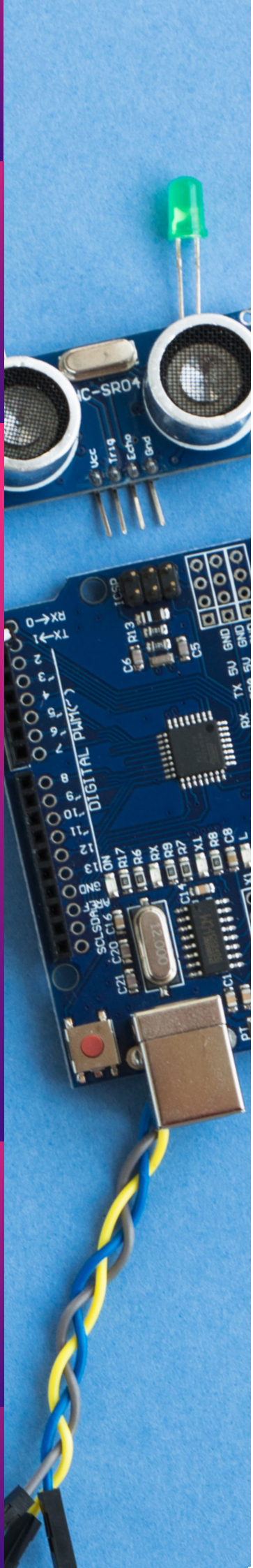

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DUBAI FUTURE FOUNDATION

United Arab Emirates
CENTRE FOR THE FOURTH INDUSTRIAL REVOLUTION

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