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Autism and Technology

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Abstract— **The world is growing in a fast pace, so is autism. Firstly, differentiating autism with differently abled, we need to enlighten people about autism and help the autistic people for their growth. Autism is a behaviorally defined disorder, characterized by qualitative impairments in social communication, interaction and imagination with a restricted range of interests and often stereotyped repetitive behaviors and manners. About 1 in 59 children has been identified with autism spectrum disorder (ASD) according to estimates from CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network which earlier was 1-2 in 1000 children. At the International Meeting for Autism Research (IMFAR), is where the idea for this Special Issue on Autism and Technology was born. Technology examples such as the use of the Internet, online communities, robotics, assistive and prompting devices, computer-aided instruction, video modelling, video/DVD instruction, virtual reality and so on. Computer-assisted instruction has also shown advantages over personal instruction for some individuals with ASD. Hence, technology helps autistic human in evolving.**

Keywords—Autism, disorder, interaction, technology

I. INTRODUCTION

Earlier when a person failed to speak, react normally or didn't hear he/she was considered to be differently abled. But with the growth of medical science now we can differentiate between the disabled and the autistic people.

Autism is a lifelong behaviorally defined disorder, characterized by qualitative impairments in social communication, interaction and imagination with a restricted range of interests and often stereotyped repetitive behaviors and manners. Sensory hyposensitivity and hypersensitivity to the environment are common features. Autism covers a wide spectrum, it is divided into – low, medium and high functioning autism on the basis of their IQ and potential. Autism is associated with a connection of genetic and environmental factor. In autism, the information processing in the brain is affected, on how nerve cells and their synapses connect and organize. Autism having covered a wide spectrum. I would like to give a brief idea on the range and will confine my research to speech delay autism.

A. Diagnosis

Autism is difficult to diagnosis as there is no test for it , so it is usually detected with various signs shown by the person.
Parents usually notice autism signs in the first three years of a child when the child

- shows no response to name
- makes no eye to eye contact
- doesn't babble for 12 months
- doesn't make any gestures

- has no social interaction
- loss of speech and communication skills.
- Has abnormal body posture or facial expression.

B. Some Common Mistakes

Sometimes children are misdiagnosed and put under the category of autism, while the real problem can be an underlying medical problem.

- Some children have medical conditions and autism, while others have medical conditions and no autism.
- Some children have learning disabilities and autism, while others have only learning issues that looks like autism.
- Some children are inattentive and can't focus on testing.
- Some children have processing issues and can't respond in enough time to be evaluated at all.

C. GROWTH STUDY

About 1 in 59 children has been identified with autism spectrum disorder (ASD) according to estimates from CDC's

Autism and Developmental Disabilities Monitoring (ADDM) Network which earlier was 1-2 in 1000 children.

2004-06	2006-08	2008-10	2010-12	2012-14	2014-16	2016-18	2018 onwards
1 in 166	1 in 150	1 in 125	1 in 110	1 in 88	1 in 68	1 in 59	1 in 59

II. TECHNOLOGY IN AUTISM

At the International Meeting for Autism Research (IMFAR), is where the idea for this Special Issue on Autism and Technology was born. Technology deals with human interactions and provides techniques to help control and organise their lives. It is shown that a human provides a more grasped attention with passion to the graphic image interaction rather than inhuman interaction, based on which technology is now a days used which shows effective treatment and enhances the lives of people with ASD and their families and interaction between them.

A. Examples

Technology examples such as the use of the Internet, online communities, robotics, assistive and prompting devices, computer-aided instruction, video modelling, video/DVD instruction, virtual reality, voice output communication

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devices, bio-sensing, telecommunication, computer-training (affect, social cognition, language), and computer-play. Computer-assisted instruction has also shown advantages over personal instruction for some individuals with ASD.

B. Details

a) Communication
There are apps and many built-in features of these devices that can help support individuals with autism at all levels and abilities. Apps can be installed in the iPad or mobile phones.

b) Visual schedules
Visual schedules on tablets can be a great tool. For example, a visual schedule for a daily routine. These visual schedules can be very helpful in helping the child learn independent living skills.

c) Decision-making
Individuals with autism who have more difficulty communicating, can use technology regarding decisions making, which helps foster their decision-making skills that are so important while they grow. For example- Showing images of their daily works or needs or food at which they can point to and let us know what they actually need.

d) Video modelling
Video modelling is a method that involves teaching skills in a visual way. The video could be of the individual him or herself completing a task or assignment, or of a teacher,educator or parent teaching the skills and steps required. The child can watch these videos as often as he or she likes/needs to help learn important skills.

e) Attention focussing.
There are many built-in apps which has puzzles, counting number, matching patterns and so on which helps in the mental development of the child and helps in building logic. Hence making them smarter.

C. Innovation in technology
The App modification As it is known that children have a soft corner for animated pictures, a mic can be made up such that it can be connected to a software (similar to talking tom app) in which a list of question shows and when the child replies to it with the elderly guidance and the animated cartoon repeats in the child's original voice so the child can hear its own voice. This can boost their confidence as they interact with them more comfortably than the humanly figure.

a) AI and Robotics
A small human replica or a toy like machine could be built which has some properties such as clapping hands, shaking hands, saying greetings. And to all the above the autistic person can act accordingly trying to replicate the same. This can lead to the betterment in social interaction as the person might know how to react on what.

b) Family App
As the speech delayed person cannot speak, it is very important for them to know who are the people close to him. For which an app can be created in which pictures of the family members can be assigned and upon clicking on the picture the name of the person that the child is supposed to call will be spoken by the inbuilt voice. This might lead to a day when the child by himself/herself calls for the person needed.

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CONCLUSIONS
The main aim to perform a research on Autism and finding a link with technology to it was that the IT industry is growing so fast and making place for it in all fields, Autism is a situation which can be bettered with the help of the advance technology. Hence technology can be used for the betterment of the mankind. With new ideas a change can, be brought in the lives of thousands of peoples hence there can be innovation.

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