Creating a Technological Device that Enhances Autistic Children's Communication Skills

Ayoub, Sama (School: Qatar Academy Doha)
Elmagarmid, Khadija (School: Qatar Academy Senior School)

Autism is a spectrum disorder that affects regions of the brain which control a person’s communication and social interaction. It is a challenge for autistic children to communicate given their limited ability to socially interact. This causes frustration for both autistic children and their parents. DIAGLOW was developed with the intent of addressing the social challenges and communication difficulties commonly associated with autistic children. It consists of an electronic device and a mobile phone application, which enables ease of communication between autistic children and their parents. The device, when used by autistic children, provides a physical and tactile experience which eliminates reliance on screen-based technology, a trait commonly associated with autistic children. The application allows the parent to receive notifications that communicate the autistic child’s needs. The DIAGLOW device utilizes a Raspberry Pi 2 along with other electronic components including LED lights, a buzzer, and push buttons conveying the child’s needs, whilst the application is developed using App Inventor. The communication between the device and the app is accomplished using the Firebase database. An assistive technology center in Qatar is interested in further developing DIAGLOW by incorporating an Arabic based Augmentative and Alternative Communication symbol set to support individuals with communication disabilities. DIAGLOW addresses the social challenges and communication difficulties that children with autism struggle with. It provides an alternative method of communication between autistic children and their parents. This achieves the goal of improving the lives of both autistic children and their families.

Awards Won:
Fourth Award of $500
Oracle Academy: Award of $5,000 for outstanding project in the systems software category.