**Inspiration**

A lot of research has gone into improvement and development of autistic children but recent research has suggested that there are certain areas of individual characteristics of these children that has not received a lot of attention, and if given focus, could have a significant impact on the holistic development and fast and continuous improvement of these children.

A very popular incorrect assumption about autistic children that a lot of people make is that they are all visual learners and have limited verbal ability. This is not true. As recent research suggests, autistic children have different learning styles and they can be classified into a broad range of categories including Verbal/Linguistic learners, Musical learners, Logical/Mathematical learners, Kinaesthetic learners, Interpersonal and Intrapersonal learners. While it is true that autistic children have trouble greeting/communicating with people, they still have good listening, speaking, reading and other capabilities. Speaking and communicating are different things.

A lot of existing apps and educational content make these incorrect assumptions. Moreover, most of this content is in English and is very visual-focused since they fail to cater to the other learning styles.

We believe that by detecting and incorporating their individual learning styles and using these to provide a better learning experience, their weaknesses could be turned into strengths, and provide them with enough confidence and differentiate themselves lesser from normal children. Crowd-sourced content can help in largely improving the existing resources (Example: Content in multiple languages) and cater to the different specialized needs of individual children. We also believe that all this data can open new doors in this field of research.

**What it does**

* Our app acts as the interface between the app users (Autistic children and parents), and content providers.
* The app focuses on the complete development of autistic children by leveraging individual learning styles to improve learning and focus on their strengths and weaknesses.
* It provides an improved algorithm to detect a child’s learning style (Visual, Musical etc.) based on a number of frequently taken general quizzes and also provides a platform for children to take quizzes in a particular learning style.
* Users (children and their parents) can browse content for topics available in all of the different categories and can request for specialized content if they don’t find what they are looking for. (Example: Learn capitals in a musical form or in a different language)
* Parents can track how their children are doing over a period of time and if their styles are changing.
* Our app uses all of the user data and specialized content requests for analytics to observe the popular learning styles and improvements in children.
* Children can also improve their communication skills by ‘talking’ to their role models using a bot.

**How we built it**

We used web technologies like HTML/CSS/JS/JQuery/PHP to build a web app for autistic children, their parents, and content providers. We used speech-to-text and text-to-speech APIs to include different types of learning. We built data science algorithms for detecting and learning a child’s learning pattern overtime using the quiz-answers data. We integrated a communicator for a child to help communicate with their favourite famous person/role model. This was developed by downloading wiki-dumps, converting third-person to first-person language and converting it into a bot. We used google charts and other analytics tools to display the charts and graphs for analytics for parents and for our app.

**Challenges we ran into**

* Doing thorough research to understand this field of study and identify weak points
* Implementing a number of features (Trying to focus on multiple characteristics of different children) in a relatively short period
* Understanding the kind of analytics we can do and should do and how impactful they can be
* Building the communicator was a time-intensive task

**Accomplishments that we're proud of**

* Being able to focus on a lot of characteristics of autistic children for their improvement
* Our thorough research
* Coming up with an original and new approach to tackle a known problem

**What we learned**

**What's next for CAL-Dev: Crowdsourced Autistic Learning & Development**

To team up with experts in this field to understand the feasibility and practicality of our approach better, points to improve and be able to turn this into a usable app. Maybe also extend this to also cater to the general population since every individual has a different learning style and these methodologies can help in the improvement of all children.