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A Proposal on

# Guiding Star: A Therapy Guide

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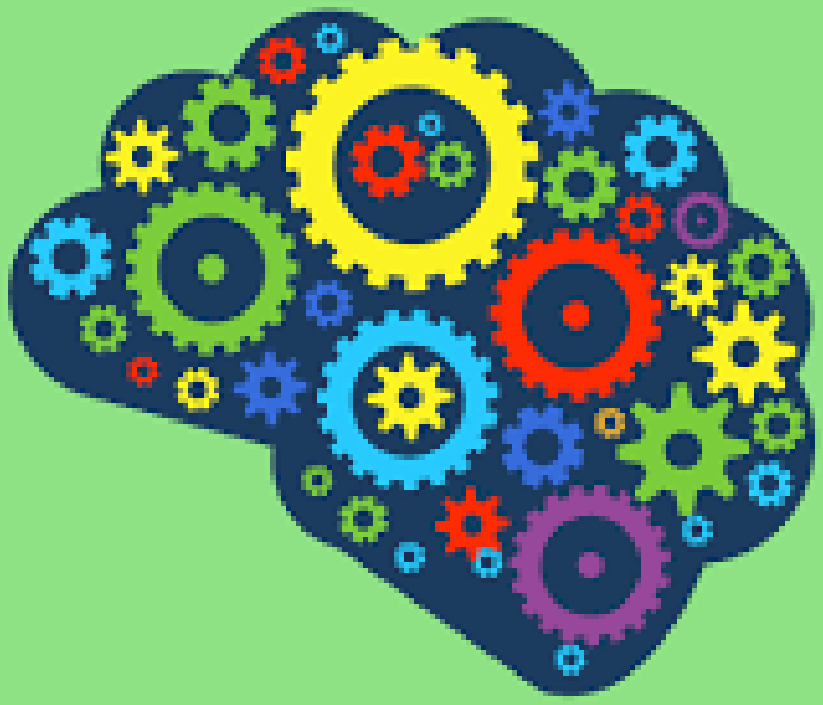
# AUTISM



## Introduction

We all have seen solutions to various problems solved by technology. From movies streaming on digital platforms,e-commerce and online shopping to automated controlled homes. Technology has made life easier in every possible way. But Have we thought about use of technology in various health and medical conditions for patients rather than in hospital and health care? Why not make it customized for every patient in their own home and comfort zone then waiting for hours for appointments in health care? The project Guiding star is an important tool for autistic children. The system will offer tailored guidance to those children with animations and games that will help them in mental and physical exercise and overall development. This will improve the patient's growth process while also saving them time from having to go through hospitals for hours. Guiding star strives to provide all autistic children with a more effective treatment experience by incorporating these elements into a user-friendly web application. In addition to assisting those children in their therapy, Guiding star will also alert users with their improvement through data analysis.

## Problem Statement

As it is evident that every 1 in 16 children are autistic and the spectrum is very broad. However, according to the research conducted at the time being,35% of children who have autism face difficulty in interactions and are non-verbal. The number goes higher if social skills and communication of the children are considered. There are a few technologies like KiWi , that

have been launched and used but affordability and accessibility becomes an issue.Also, seeing the therapist on a regular basis bears expense and transportation issues to families.

# Aim and Objectives

## 2.1. Aim

This project's goal is to create a guided therapy system that offers help to children with autism and their parents for practicing the speech exercises through interesting games. The system will offer various games covering 3 different parts of speech therapy namely:

- **Focus**
  Children will be made to focus on the content through different music flowing simultaneously

- **Communication**
  The communication will be facilitated through warm up speech exercises and simulated through sounds produced by animations for children to follow.

- **Eyecontact**
  It will enhance the therapy process, making it enjoyable and effortless. This project represents a significant advancement in the medical sector to improve user experiences in the medical industry.

## Objectives

To enhance medical procedure through storytelling and games to engage mentally retarted children effectively.

1. To design and implement games with features like communication ,focus,engagement etc.
2. To integrate APIs for tasks like fetching sounds, allowing users to use their social media accounts to log in, etc.
3. To develop distinct sections that provide therapy based on various criteria.
4. Formulate and architect a database as part of the project's development process.
5. To implement password encryption and session management for enhanced security.
6. To ensure the system is mobile-friendly and deployable.
7. To create a well-organized report containing the required information.
8. To make flowcharts, pie charts, bar graphs based on improvements by data analysis.

## Preliminary Literature Review

ASD is a condition that is categorized as a disability due to the cognitive disorders that people with ASD face. Several studies showed that most people with autism show a natural affinity for technology and a good disposition for using technology and learning through the use of computers. This is because the environment and context that these experiences provide are predictable and structured, which helps people with ASD to maintain their routines and repetitive behaviors without affecting their comfort.

Several studies have proposed the use of modern technologies to help teach skills to people with ASD. Some interesting examples of new technological approaches are the use of sensors, virtual reality, virtual agents, augmented reality, geolocation, and Kinect. A mobile application along with the use of Estimote Beacon sensors to identify objects, supports children with ASD in pronouncing new words and identifying their meanings.

- Assistive technology application for enhancing social and language skills of young children with autism by Wojciechowski A. and Al-Musawi R.
- An intelligent serious game for fostering social communication in children with autism by Bernardini et al.
- ECHOES is a serious game that focuses on the development of activities to promote social communication in children with ASD using an autonomous virtual agent that acts as a companion for children during their interactions with the system.
- MOSOCO: A mobile assistive tool to support children with autism practicing social skills in real-life situations in 2012.

- Knowledgemon Hunter: A Serious Game with Geolocation to Support Learning of Children with Autism and Learning Difficulties in 2017.

There are various solutions like proloquo2go and touchchat HD, Model Me kids, lucid -chart and other many which provide paid services. So, the hunt is still going on for cheaper and homely alternatives.

## Proposed Methodology

Owing to the inaccessibility and expense of existing methodologies and therapeutic apps,websites and machines, there's a requirement of a more generous and affordable system that can help autistic children in learning speech and practicing verbal communication. Our project "Guiding Star" is an economical and guided solution to stimulate verbal communication in autistic children that also involves parental involvement.

"Guiding Star" is an app that provides speech stimulation and correction using speech therapies in the most simple and interactive ways through games. The app will open to an interface that runs warm up sessions before games and conducts games which include imitation of animation, color and alphabet identification, drawing activities, animal sound copy and object identification that also improves focus and eye contact in autistic children. There are various levels in the games that give you stars on accomplishment of each level. The weekly and monthly progress report will be provided analyzing the data throughout the week.

## Expected Outcomes and Deliverables

The project will result in a fully operational web application with a user-friendly interface, designed to provide personalized therapy. The deliverables will encompass the comprehensive source code and technical documentation elucidating the system's architecture and implementation specifics.

## Scope of the project:

The anticipated system features include:

- User authentication, including Login/Sign Up with the option to use social media accounts.
- Development of an admin panel for tasks such as playing games and accessing user profiles.
- Integration of an api driven sound and communication system.
- Implementation of a game feature with level up capabilities.
- Provision for users to choose  which game to play.
- Provision for users to see improvements through graphs and plots.

## Resource Requirements

The successful completion of this project will require a range of essential resources:

- Software Resources:

a.user interfaces building library.
b. Django (Python): A high-level Python Web framework that encourages rapid development and clean, pragmatic design.
c. MySQL: A robust, open-source relational database management system (RDBMS) designed for efficient data storage and retrieval.
d. Visual Studio Code: An efficient IDE for coding, debugging, and project management.
e. Balsamiq: Essential for creating wireframes, and guiding user interface design.

- Hardware Resources:

A computer system with sufficient memory and processing power to handle software development and testing.

- Other Resources:

a. APIs: Various APIs, including the likes of TMDB API, for retrieving sounds and social media information.
b. Web Hosting Service: A hosting service such as AWS or Heroku, utilized for deploying the web application.
c. Dataset: A comprehensive movie dataset encompassing all pertinent data details.

## Conclusion

Guiding Star is a project that seeks to address the issue of therapy in the world of technologies. It offers consumers customized therapy  based on their levels and preferences using fun activities. Removing the need to sift through countless possibilities, increases customer happiness and saves time. Additionally, Guiding star provides a user-friendly online application that makes it possible for customers to have a seamless and immersive therapy experience.
The initiative has a great deal of potential to benefit medical field as well as users. To ensure quality, security, and user- centricity, the project adheres to the Scrum methodology and a clearly defined SDLC.