Research on Application of Artificial Intelligence in Kids Interactive Learning Platform

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Abstract:- **Artificial Intelligence is accompanying a whole generation of children to grow up in a rapidly changing digital world, with the proliferation of virtual assistants such as Siri and Google Assistant and many other AI-enabled applications in all sorts of areas such as healthcare, automobile, education, social media, entertainment, and robotics Artificial Intelligence helps young learners to create logical reasoning skills. It helps them develop an understanding to realize the new digital tools that will help your kids increase their aware- ness and smartness. As artificial intelligence technology gaining in popularity, its application to semester education is becoming increasingly important in encouraging student growth. To begin with, kids are immature blossoms and country future. child's artificial intelligence education may assist them not just to acquire a wide range of sophisticated information, but also considerably enhance their creativity and imagination. Secondly, automation and artificial intelligence training and education to kids is beneficial to improving their grasp of artificial intelligence technology, which could also generate favourable learning settings for kids later on. Lastly, the implementation of artificial intelligence technology in preschools is in keeping with active teaching trends. Artificial intelligence has been used in applications to alleviate certain problems throughout industry and academia. AI, like electricity or computers, is a general purpose technology that has a multitude of applications. It has been used in fields of Shape recognition, Speech recognition, facial expresstion detection credit scoring, e-commerce and other do- mains.**

Keywords:- Kids Interactive Learning Platform; Child, Parents, Artificial Intelligence, Impact,Learning.

I. INTRODUCTION

Kid's Interactive Learning Platform using Artificial Intelligence is a Preschooler Learning Mobile Application system focusing on earliest exposure of education system which Kids Interactive Learning Platform is Android based Application which is including AI based Learning Activities will be Shape Recognition, Speech Recognition and Facial Expression Detection. Instead of hardcopy materials and mobile as the AI learning medium, parents can use this mobile learning application to teach their kids wherever and whenever they want. The tool that used to develop the plat- form is Android Studio with firebase database.

The primary (main) user for this system is pre-schoolers age range between three to seven years old and the secondary user are the elder people such as parents, siblings, or any other with android device to guide and teach the primary user. The Kid's Interactive Learning Platform Using Artificial Intelligence Mobile Learning System consists of three activities which are "Shape Recognition", "Speech Recognition", and "Facial Expression". In "Shape Recognition" module detecting shapes like Triangle, Rectangle Circle etc. In "Speech Recognition" module to identify words spoken aloud and convert them into readable text. and in "Facial Expression Recognition" module identifying the expressions on face images in- to various categories such as anger, fear, surprise, sadness, happiness and so on.

Parents can install this application into their mobile and teach the kids from any time wherever and whenever they are. In addition, this system may help the kids to learn with fun and safe as well. They can also learn at home and not only in school in which through parent's mobile phone with parent guide. Parents may encourage their kids to pursue individual interests, engage with them, educate and fun with them, and assist them in growing up while still enjoying life and family. At same time, family education places a great value on the parents' overall competence. Children's attitude and ways of living are immature, yet they have a tremendous aptitude to mimic. Parents are role models for their children, therefore they must provide a positive example. To put it another way, nasty parents cannot raise polite children. If parents claim on their children over them- selves, it is unavoidable for youngsters to rebel. As a result, family education is indeed a two process in which parents offer specialized education to their children while also continually strengthening self-learning, self-control, setting excellent examples for children, and influencing them in all parts of life.

➢ *Importance of AI in Early ChildhoodEducation*

As artificial intelligence technology gaining in popularity, its application to semester education is becoming increasingly important in encouraging student growth. To begin with, young kids are immature blossoms and country future. Young child's artificial intelligence education may assist them not just to acquire a wide range of sophisticated information, but also considerably enhance their creativity and imagination. Secondly, automation and artificial intelligence training and education to young kids is beneficial to improving their grasp of artificial intelligence technology, which could also generate favourable learning settings for kids later on. Lastly, the implementation of artificial intelligence technology in preschools is in keeping with active teaching trends. Using robots for teaching early child lesson gives students have hands on experience which help them comprehend all concepts. These experience might pays off handsomely in future.

On the surface, Consider the potential long- term benefits that a more individualized and successful preschool education may give for kids, all the benefits of AI in early child edu- cation is shown in fig 1.
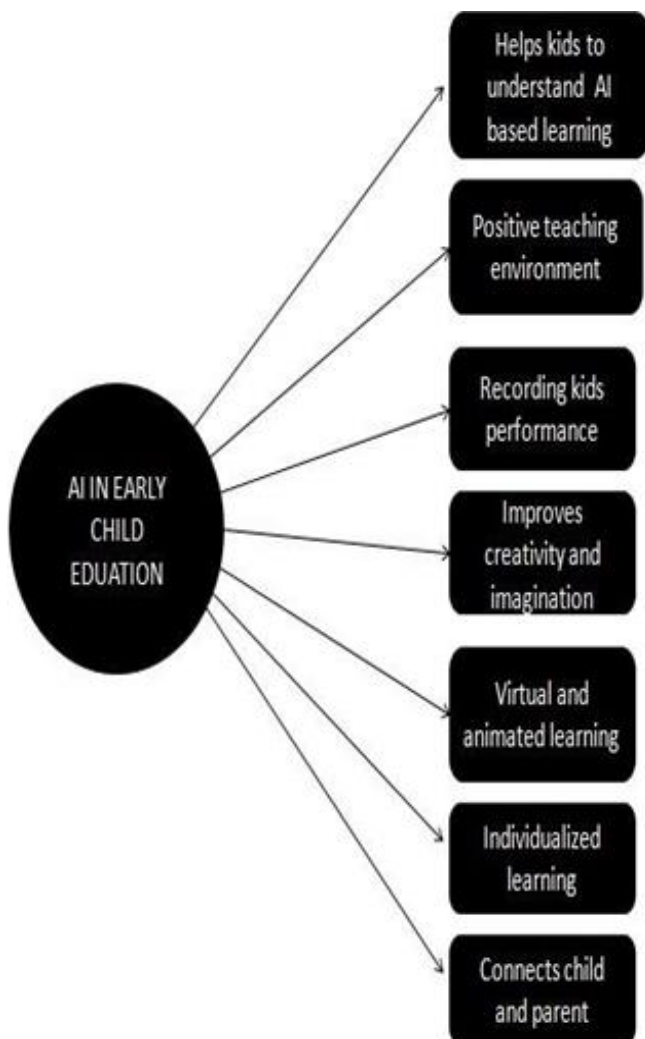
➢ *Benefits of AI in Early Age*

Fig 1 Benefits of AI in Early Age

➢ *Related Works*

Artificial Intelligence will have the greatest impact on education due to automated support, particularly in the context of virtual interaction. According to individualized tutoring feedback is one of the areas associated with computer-based technology that has much better educational utility. By integrating machine learning with application explains how AI may be used for formative education, evaluation, and feedback. The results demonstrate that using automated responses to measure student progress.

One of the researchers supposed an approach for detecting and recognizing shapes like tri- angle and square and circle in the photo by using an algorithm, and that algorithm was working by utilizing the value of intensity from the photo which has been input and applied then the thresholding in order to get the binary image. A filter step applied after that to erase the noise and after that an operation is used to locate the edges of shape and another approach is used to erase the edges which are not needed because these edges could be related to something else and for decrease the false recognition. The density of the region helped the decision of shapes.

In a research field of emotion detection, there is a contribution of several domains like ma- chine learning, natural language, neuroscience, etc. In previous works, they individually rummaged facial expressions, voice features, and textual data as universal indicators of emotions. Emotion can be classified into several static classifications like happiness, sad- ness, disgust, anger, fear, and surprise.

Model of speech recognition was based on artificial neural networks. This was investigatedto develop a learning neural network using genetic algorithm. This approach was implemented in the system identification numbers, coming to the realization of the system of recognition of voice commands.

II. METHODOLOGY

➢ *Shape Detection System (SDS)*

In this module user will learn the differentshapes like triangle, circle, rectangle etc. Using whiteboard. Firstly, platform will ask the User to draw the shape on the whiteboard then AI will check if the shape drawn by user is correct or not. If the shape drawn by user is incorrect then it will show the correct shape. This module is using the algorithm that was working by utilizing the value of intensity from the photo which has been input and applied then the thres holding in order to get the binary image.

A filter step applied after that to erase the noise and after that an operation is used to locate the edges of shape and another approach is used to erase the edges which are not needed because these edges could be related to something else and for decrease the false recognition.
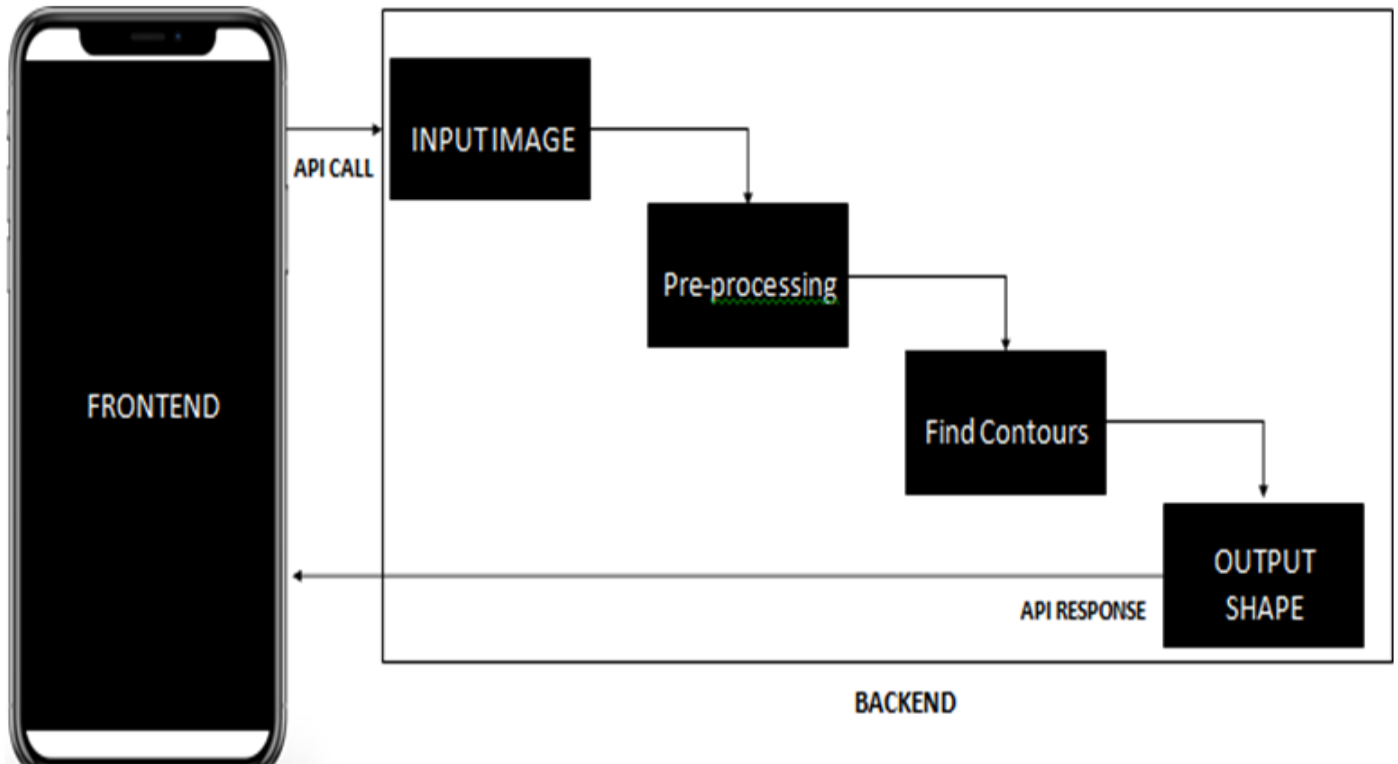
Fig 2 Shape Detection System (SDS)

➢ *Speech Recognition System (SRS)*

In this module user will speak the word and those images will be displayed on the screen by recognizing the text. This module takes voice signal as an input to a neural network, after processing the audio data received an array of segments of the signal. Each segment corresponds to a set of numbers that characterize the amplitude spectra of a signal, to pre- pare for the calculation for the signal outputs of the neural network.
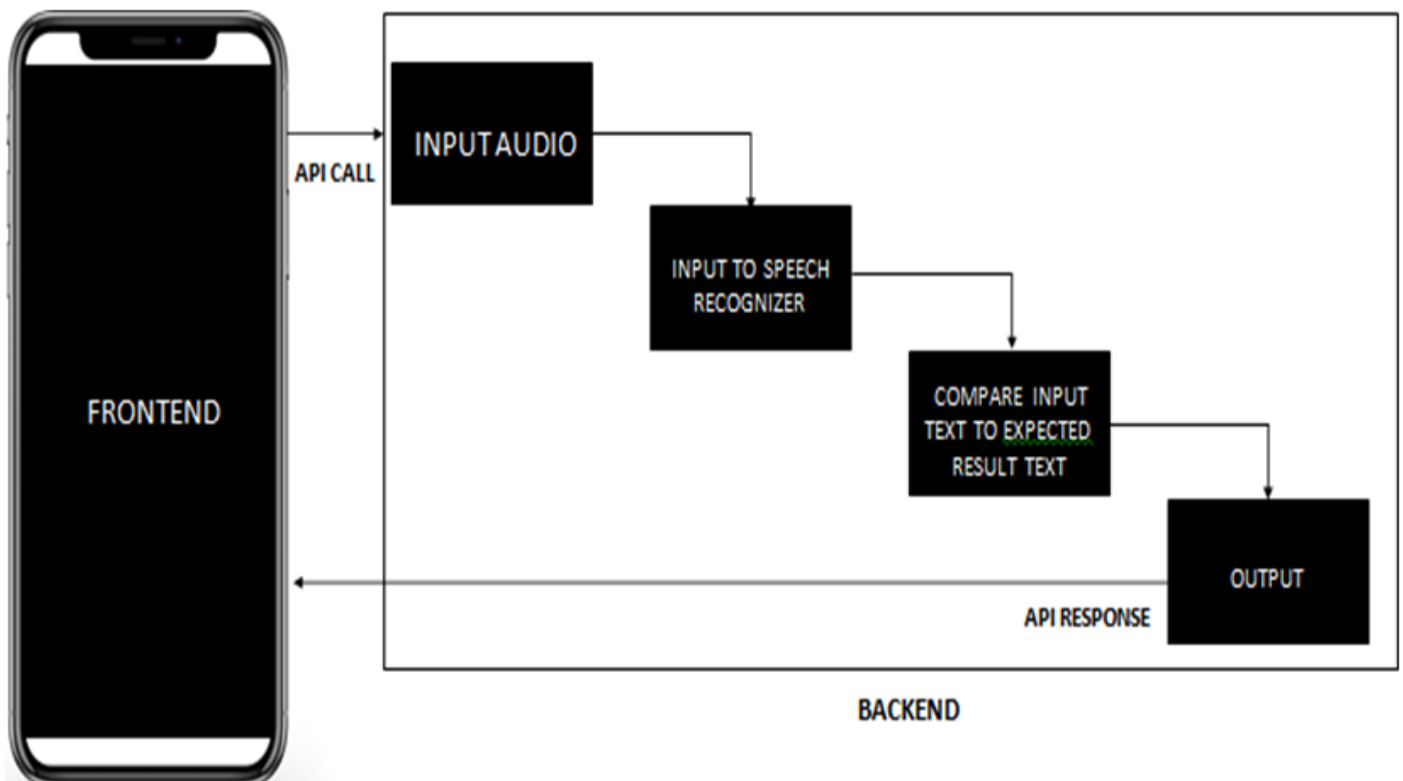

Fig 3 Speech Recognition System (SRS)

➢ *Facial Expression Recognition System (FERS)*

In this module capture the user image from camera and identify facial expression. This work deals with the emotion recognition with the Machine learning using support vector machine (SVM). Some principles are work to detection, extraction, and evaluation of facial expressions of image.

- Viola-Jones cascade object detectors and Harris Corner key points to extract faces and facial features from images.
- Histogram Of Oriented Gradient (HOG) Feature Extraction.
- Support vector machines (SVM) to train a multi-class predictor to classify the seven basic human facial expressions such as: (anger, fear, happiness, sadness, surprise).
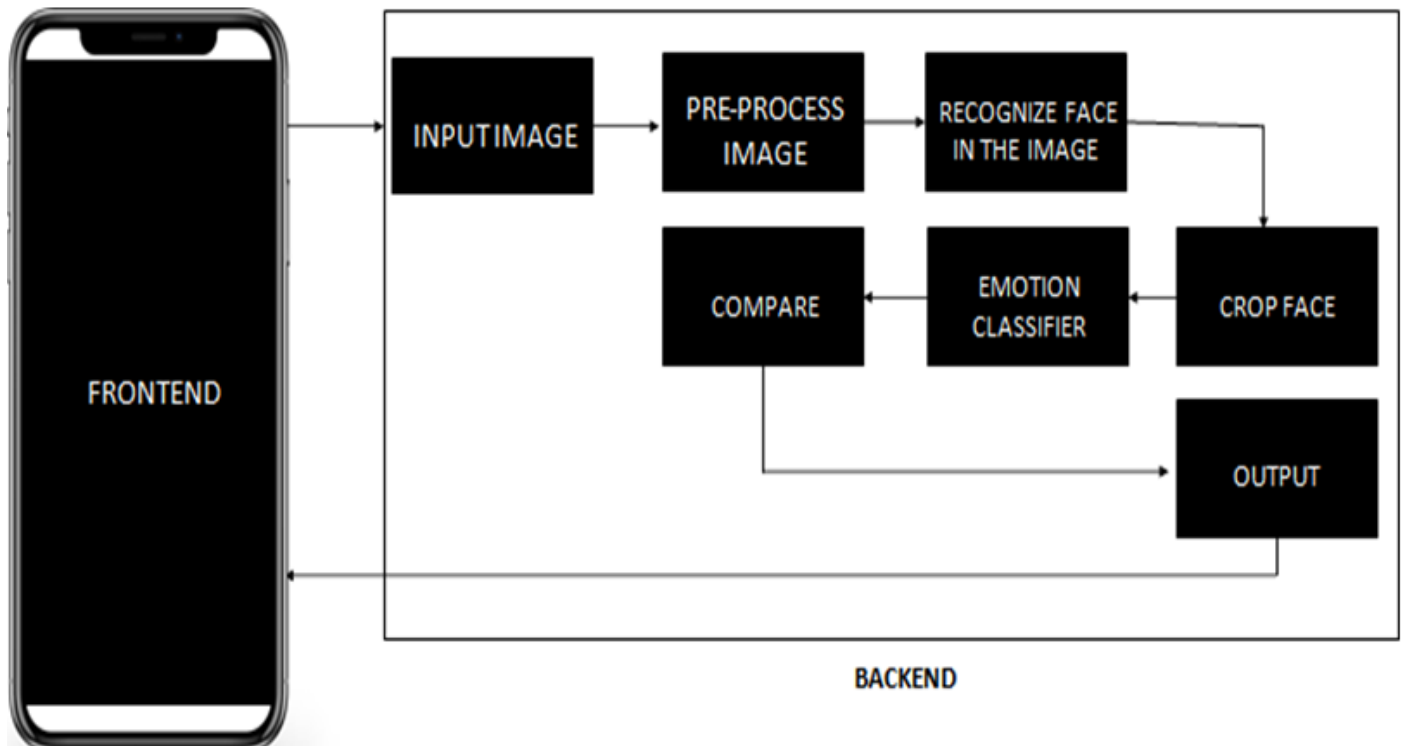

Fig 4 Facial Expression Recognition System (FERS)

III. IMPLEMENTATION

➢ *Platform Flow*

- *Create Kids Account*

To begin with the application user(kid) need toregister with the help of parent by filling the registration form

- *Login*

After successful registration user(kid) will be able to login with login credentials, if the cre- dential is valid then user will prompted to- wards next step and if the credentials are not valid it will show that the data is invalid.

- *Learning Process*

In learning process user need to attend video based lessons and after that user will do AI based activities based on the learning process.

- *AI Based Activities*

Based on learning process there will be three AI based activities such as shape based activi- ties, speech based activities and facial expression based activities.
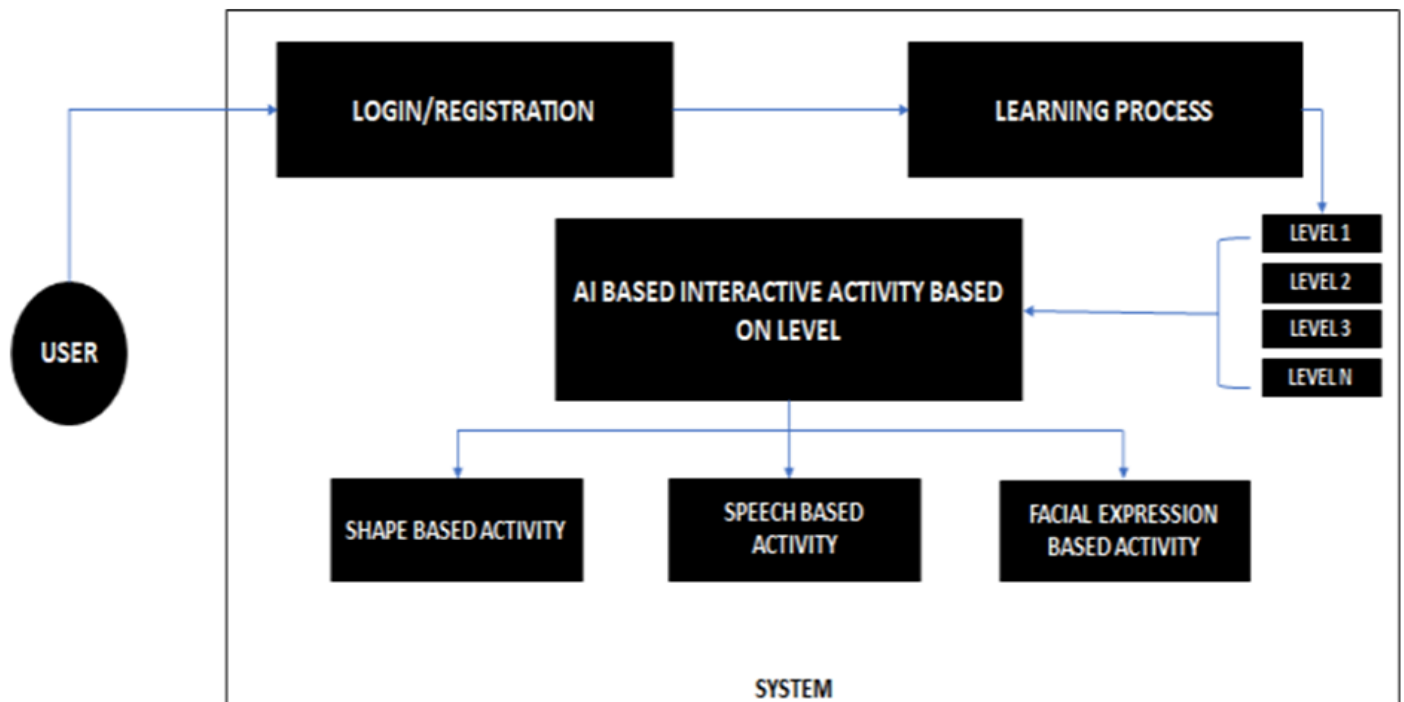
➤ *System Overview:*

Fig 5 System Architecture

IV. CONCLUSION AND FUTURE WORK

Young child's artificial intelligence education may assist them not just to acquire a wide range of sophisticated information but also considerably enhance their creativity and im- agination. Secondly automation and artificial intelligence training and education to young kids is beneficial to improving their grasp of artificial intelligence technology, which could also generate favourable learning settings for kids later on.

In future we will Integrate a toy robot with the platform. Currently the platform supports onlyone language but in future the platform will be able to support various languages available. Parents monitoring module can be introduced.

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