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Research paper

Realization of speech in design intent of geometric modelling

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Abstract

The conventional interactive mode is especially used for geometric modeling software. This paper describes, a voice-assisted geometric modeling mechanism to improve the performance of modeling, speech recognition technology is used to design this model. This model states that after receiving the voice command, the system uses the speech recognition engine to identify the voice commands, then the voice commands identified are parsed and processed to generate the geometric design based on the users voice input dimensions, The outcome of the system is capable of generating the geometric designs to the user via speech recognition. This work also focuses on receiving the feedback from the users and customized the model based on the feedback.

Keywords: *Dimensions; Feedback; Geometric Modeling; Internet of Things; Speech Recognition.*

1. Introduction

Geometric modeling software is based on parametric technique and restriction technique in this model mainly speech recognition technique used to design the geometric model depend on the users given parameters. This model identified the voice command then it's parsed and processed to get the design. The most important recon of this paper is represented by using various partnerships with the customers. This will obviously develop its recognition collectively with the feedback data.

Based on the feedback information a couple of enhancements can be completed. These improvements cross from higher speech recognition to easier commands and with feedbacks for improvement of the application based on consumer necessities .This version may be used for the school, college students and their instructors to educate the geometry lessons. This application could have speech recognition as a pillar and pursuits to educate the youngsters about the generation and IoT by way of having them come across precise techniques at this early stage. We allow the system to adapt itself to the user needs and expertise.

This system provides voice recognition by using Google API. This system also consists of text to speech mechanism, so that the blind can understand the actual pronunciation of letters and words. The Intelligent Procedure Assistant (IPA) [2] system was designed considering that the user's need, IPA is a multi-modal spoken dialogue system aimed at providing guidance, support and under the execution of large functional procedures.

2. Related works

L.C. Parra et.al [2002]described the convolutive blind source separation and adaptive beamforming have a comparable goal-extracting a source of interest (or more than one assets) at the same time as lowering undesired interferences. A gain of source separation is that it overcomes the conventional pass-speak or leakage trouble of adaptive beamforming. Beamforming however exploits geometric records which is often without difficulty available however no longer utilized in blind algorithms. We recommend to join these benefits with the aid of combining pass-energy minimization of 2nd-order supply separation with geometric linear constraints utilized in adaptive beamforming.

Yang Yu et.al [2010] anticipated the parametric layout and wise meeting machine has been designed and advanced of lubrication recycling station. The device carries two human-machine interfaces and one database. The person input the element parameters through the parametric layout's interface, the machine routinely generates the 3-dimensional model and the 3-view chart of the component and stored the statistics into the database. All components parameters were stored in the databases, the wise assembly sub-machine break out the statistics could be assembled elements, and assemble those components in keeping with the connection between assembly to generate assembly drawing. Using of the system extensively improved the efficiency of product layout and shorten the design cycle, reducing duplication of attempt.

Jean-Marc Valin et.al [2016] described a complete multi-microphone speech recognition device capable of performing speech popularity on three simultaneous audio systems. The machine closely integrates all levels of source separation and lacking features recognition as a way to maximize accuracy inside the context of simultaneous speakers. We use a linear resource separator based totally on a simplification of the geometric source separation algorithm.

Fan Wang et.al [2017] Proposed the modeling instructions which are appropriate for voice description and agree to human conduct. According to those voice instructions, the development of the grammar report is completed. The voice commands and Windows messages are mapped to generate MSM documents. On the idea of the grammar file, the feature of speech popularity is realized with the aid of encapsulating the speech reputation interface and initializing the popularity engine. Therefore, the speech-assisted geometric modeling is feasible and has a sure improvement in modeling efficiency.

3. Proposed system

The proposed machine includes the feedbacks from clients and absence of guide for custom instructions. Based on the comments statistics more than one enhancements may be achieved using internet of factors. These upgrades cross from better speech recognition to less difficult commands. It helps the youngsters and their instructors for geometry training. This application may have Speech popularity as a pillar and targets to educate the students. Google API. This system additionally encompasses textual content to speech mechanism, in order that the blind can capture the real pronunciation of letters and words.

3.1. Powerful speech recognition

This work makes use of voice record module for processing the input from the user. Before the input will be processed, the input must be converted into string and it should be passed to TTS [Text To Speech].If the string that contains any abbreviation means then it should be 5 x 5 diameter input and the work attempts to improve the quality of the input by adding codes and regular expression. Then it should be helpful for storing the frequencies of inputs.

3.2. Drawing geometric shapes

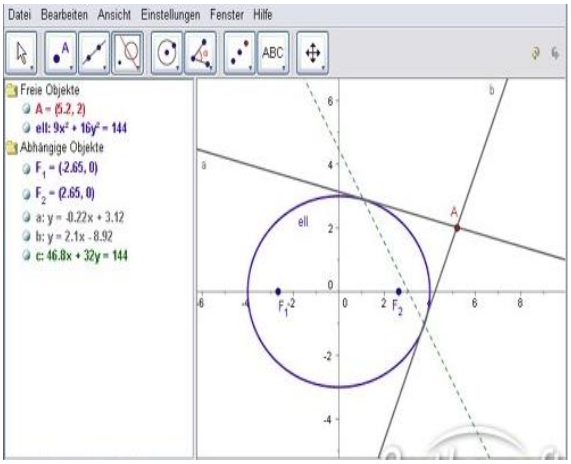

Fig. 1: Pictorial Representation of Drawing Geometric Shapes.

The drawing context module is responsible with displaying the information on the screen. The goal when designing this was to keep a plug-n-play architecture in such way that any library or framework could be used instead of the JSX Graph framework. In this system the architecture is based on generating the geometrical-shapes and making the part of learning maths easier by utilizing the technology so called the voice recognition. This application also includes the Internet-of-Things concept in it and has the custom feedback system which even more helps the user to utilize the application more and the admin to develop the application based on the customer's requirements and meeting the difficulties in learning. Integrating IoT specific techniques in the daily school activity proves to be the simplest yet most effective method. This method should be preset as a fun learning alternative.

3.3. Users opinion

Pupils like the application and the way it works. The eye candy features that let them change colors, widths, clear the board and export then immediately print it on paper, proved to be a great choice. The export and print is a great bridge across the paper and e-learning process. Implementing and using this we managed to convince them that this application and process should not be perceived as something that is forced but rather as a great alternative.
This application also gives an added advantage of giving the feedback based on there convince this makes the application even more interesting when the user feels some discomfort or needs and new feature added to it users need not be struggling with it he can just give a voice on what needs to be done and this automatically pop's on the admins system so that it can improve it as soon as possible and helps the user to learn maths with fun.

3.4. Feedback system

Based on the feedback data multiple improvements can be done. These improvements go from better speech recognition to simpler commands. This feedback system also helps the admin to develop the application in all possible customer requirements this application also needs to have partnerships with most of the schools colleges and industries so that this application could get more popular and make the students of the primary classes know what is internet-of-things in the starting stage of studies which develops the creativity of each student.

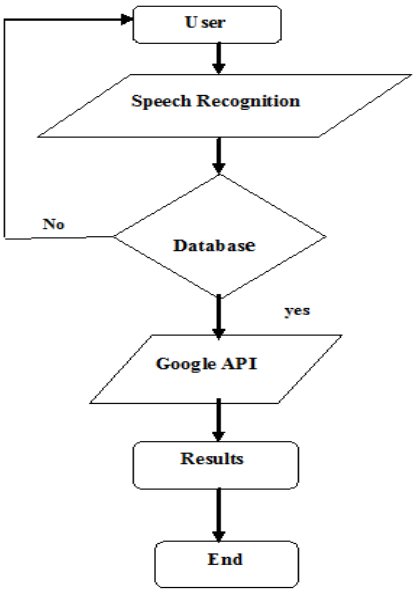

Fig. 2: Flow Diagram of the Proposed Work.

Fig. 2. Represents the basic flow of the speech recognition in geometric design. The user deliver the input dimensions by voice, the system recognize the voice and map with the database if it matches then produce the resultant geometry design.

4. Simulation and results

4.1. User registration page

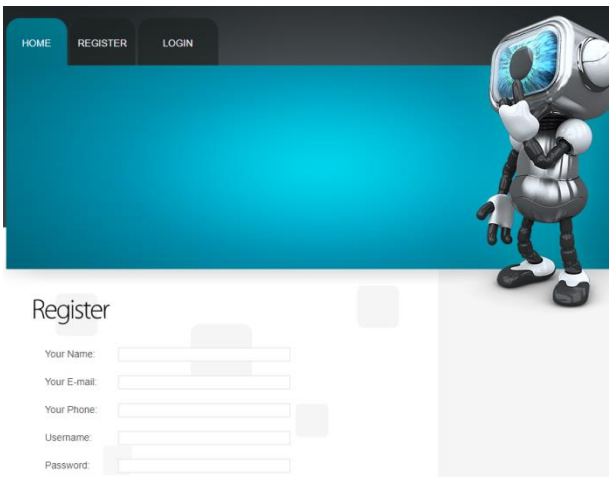

Fig. 3: User Registration Page.

The first user-interface page of this project is the registration page for the user. This page collects all the details of the user. This also accepts the voice of the user also for registration.

4.2. User voice input

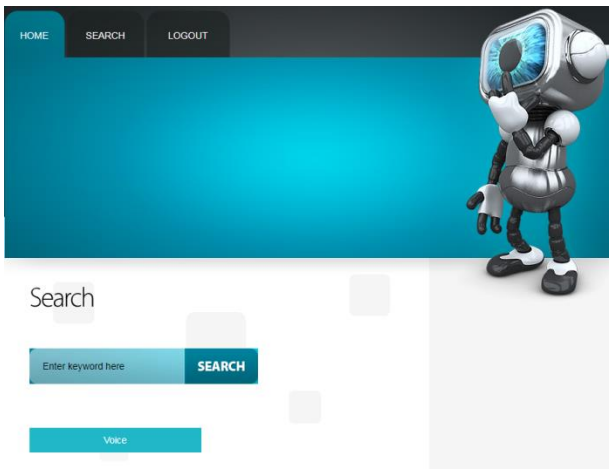

Fig. 4: User Voice Input Page.

This page is the important page of the project. This helps the users to use their voice to send their commands to the systems which will recognize the users voice and will display the required diagrams based on the user mentioned dimensions and will also help the user to learn mathematical formulas and equations in a very interesting and a cheerful manner.

```
(function () {
  /**
   * a robotic speaker who speaks with given text and language    */
  function RobotSpeaker()
  {
    try{
        this.u = new SpeechSynthesisUtterance();
    }
    catch(ex){
        throw "This browser does not have support for webspeech api";
    }
    this.u.rate = 1.0;
    var callBack = null;
    this.onEnd = function(cb) {
      callBack = cb;
    };

    };
    this.speak = function(lang, text){
        this.u.lang = lang;
        this.u.text = text;
        speechSynthesis.speak(this.u);
    };   }
```

Fig. 5: Sample Code for Voice Input.

4.3. User drawing shapes using speech

4.3.1. Drawing a line

This will be the output of the page ,that the user has give the instruction to the system saying that they need a line c,d with a length of 11,20,.So when this instruction is given the system recognizes the command given by user converts the voice to-te voice to-text and displays a line of the user required length.

Fig. 6: Drawing A Line.

4.3.2. Drawing a right angled triangle

This output is obtained based the users voice command saying that the user needs a right angled triangle a,b,c, of dimensions such as 26,11,36.Reading the users command to draw the right angled triangle the output for this command will as given below.

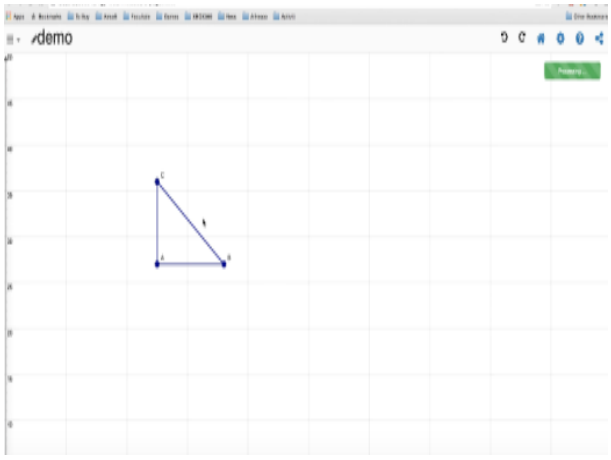

Fig. 7: Drawing A Right Angled Triangle.

4.3.3. Admin login page

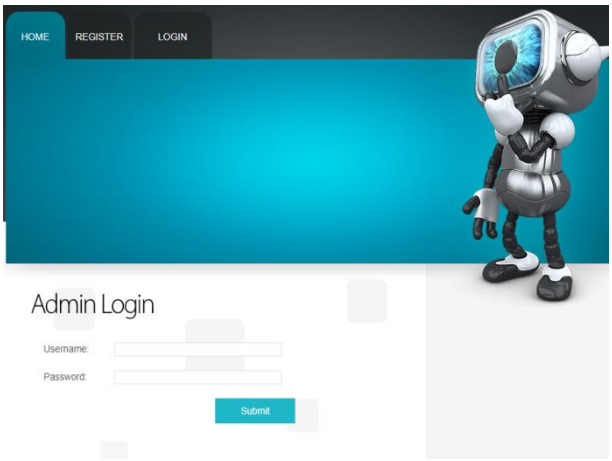

Fig. 8: Admin Page.

This is the admin login page which will be accessed by the admin and not anyone else, so this page will display all the feedbacks given by the user and also the admin can monitor the users who are using this software .The admin alone can read the feedbacks that has been given by the user and he can make all the changes that are required for the users and can make the system even more user friendly and help people learn with fun.

5. Conclusion

A Speech recognition system for providing geometric design was designed and simulated for user desired dimensions also received the feedback from the users and customized the model based on the feedback. The speech-assisted geometric modeling is feasible and has a certain improvement in modeling efficiency. That helps the user for greater experience about the geometric design with feedback and learns mathematics with fun.

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