ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

Hand gesture recognition and voice conversion system for dump people

S. SRIKANTH[1], N.LATHA[2], N.DHARANI[3], M.NITHYA[4]

[1]Assistent Professor and Department of ECE, Malla Reddy Engineering College for Women (UGC-Autonomous) Maisammaguda,Hyderabad, TS, India.

[2,3,4] UG students Department of ECE, Malla Reddy Engineering College for Women (UGC-Autonomous) Maisammaguda,Hyderabad, TS, India.

ABSTRACT:

This project is based on converting the audio signals receiver to text using speech to text API. Speech to text conversion comprises of small, medium and large vocabulary conversions. Such systems process or accept the voice which then gets converted to their respective text. This paper gives a comparative analysis of the technologies used in small, medium, and large vocabulary Speech Recognition System. The comparative study determines the benefits and liabilities of all the approaches so far. The experiment shows the role of language model in improving the accuracy of speech to text conversion system. We experiments the speech data with noisy sentences and incomplete words. The results show a prominent result for randomly chosen sentences compared to sequential set of sentences.

Keywords: text, speech data, API.

1. INTRODUCTION:

This project is based on converting the audio signals receiver to text using speech to text API. Speech to text conversion comprises of small, medium and large vocabulary conversions. Such systems process or accept the voice which then gets converted to their respective text. This paper gives a comparative analysis of the technologies used in small, medium, and large vocabulary Speech Recognition System. The comparative

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

study determines the benefits and liabilities of all the approaches so far. The experiment shows the role of language model in improving the accuracy of speech to text conversion system. We experiments the speech data with noisy sentences and incomplete words. The results show a prominent result for randomly chosen sentences compared to sequential set of sentences.

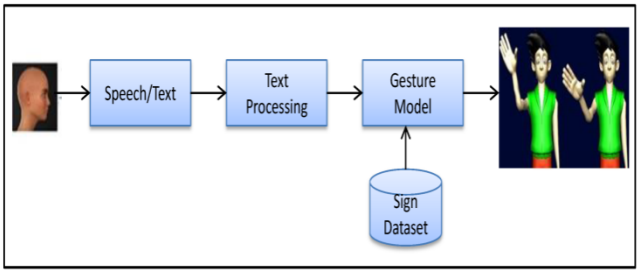


Fig.1. Model Diagram.

Text to sign language conversion is mainly focused on communication between ordinary people and ordinary people and deaf-mute people. Sign language paves the way for deaf-mute people to communicate .Sign language is a visual language that is used by deaf and dumb as their mother tongue. It is figure out about 240 sign language have exist for spoken language in the world. Sign language is a type of language that uses hand movements, facial expressions and body language to communicate. It is used by the people who are deaf and people who can hear but cannot speak.

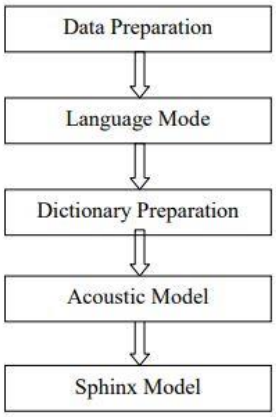


Fig.2. Architecture Diagram.

2. LITERATURE SURVEY

1. sign language to text and vice versa recoganization using computer vision in Marathi

Sign language recognition is one of the most growing fields of research today and it is the most natural way of communication for the people with hearing problems. A hand gesture recognition system can provide an opportunity for deaf persons to communicate

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

with vocal people without the need of an interpreter or intermediate. The system is built for the automatic recognition of Marathi sign language. Providing teaching classes for the purpose of training the deaf sign user in Marathi. The system can train new user who is unaware of the sign language and the training will be provided through offline mode. In which user can learn sign language with the help of database containing predefined sign language alphabets as well as words. A large set of samples has been used in proposed system to recognize isolated words from the standard Marathi sign language which are taken using camera. The system contains forty-six Marathi sign language alphabets and around 500 words of sign language are taken. Considering all the sign language alphabets and words, the database contains 1000 different gesture images. The proposed system intend to recognize some very basic elements of sign language and to translate them to text and vice versa

2. Rehabilitation of hearing impaired children in India

The prevalence of deafness in India is fairly significant. It is the second most common cause of disability. Approximately 63 million people (6.3%) in India suffer from significant auditory loss.1 Rehabilitation of hearing impaired children in India remains a challenging task. Early detection and intervention are the mainstay of this initiative. This article does not purport to detail the clinical aspects and surgical management of hearing handicapped children. We discuss here the resources and options available in India for the education of deaf children and the role of the Government bodies in rehabilitation. Awareness about education and rehabilitation of hearing handicapped is low among the general public and even among the medical fraternity

3. "Study of Sign Language Translation using Gesture Recognition

Communication is an integral part of human life. But for people who are mute & hearing impaired, communication is a challenge. To

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

understand them, one has to either learn their language i.e. sign language or finger language. The system proposed in this project aims at tackling this problem to some extent. In this paper, the motivation was to create an object tracking application to interact with the computer, and develop a virtual human computer interaction device. The motivation behind this system is two-fold. It has two modes of operation: Teach and Learn. The project uses a webcam to recognize the hand positions and sign made using contour recognition [3] and outputs the Sign Language in PC onto the gesture made. This will convert the gesture captured via webcam into audio output which will make normal people understand what exactly is being conveyed. Thus our project Sign Language to Speech Converter aims to convert the Sign Language into text and audio.

4. "The pedagogical struggle of mathematics education for the deaf during the late nineteen century: Mental Arithmetic and conceptual understanding

An advisory e-user group comprising ministry personnel, teacher educators, educational researchers, NGOs, foundations and other development partners offered advice and support and commented on the draft initial report and draft final report, and responded to enquiries within their area of expertise. Nine electronic databases for relevant literature and 17 key journals were hand searched; the websites of key governmental and non-governmental organisations were also searched; citations referenced in identified papers were followed up; and team members, the e-user group and the team's professional contacts were consulted for recommendations of relevant studies and 'grey' unpublished reports and papers. The review was conducted in two stages. Stage one consisted of a systematic 'mapping' exercise on the 489 studies that met the inclusion criteria through coding, giving a broad characterisation of pedagogical practices used by teachers in formal and informal classrooms in developing countries. Studies that met the inclusion criteria of relevance and clarity of method

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

were selected for stage two, the in-depth review. Fifty-four empirical studies, reported in 62 publications, using both quantitative and qualitative methods, were included and rated for methodological trustworthiness and quality of contextualisation. A random sample of 15% of studies was double coded for quality assurance. Data from the 45 studies ranking high or moderate on both dimensions were used to address this review's overarching research question.

METHODOLOGY

DATA PREPARATION

The corpus used for the system is the publicly available corpus. It contains a total of 1000 sentences about general information. The system is trained with 1000 sentences and tested 150 sentences.

LANGUAGE MODE

A Language model comprises of a large set of words together with its chances of occurrence. The model extracts the number of unigram bigram and trigrams of the corpus and calculates the probability of each unigram bigram and trigram. These statistical results are used by the decoder to predict the possible combination of words and phrases. It helps to achieve faster execution and higher accuracy by constraining the search in a decoder by limiting the number of possible words that need to be considered during the search.

DICTIONARY PREPARATION

Dictionary provides the data to map vocabulary words to sequence of phonemes to the system. Uses Letter-only phone names without special symbols which simplifies the system. Dictionary should contain all the words needed to be recognized by the recognizer.

ACOUSTIC MODEL Acoustic model is a file which contains statistical representation of each of individual sounds that make up a word. An acoustic model is created from a speech corpus using training algorithms. In Sphinx it is done using Sphinx train module. This part gives the output in the form of a configuration file. The parameters written in configuration file are used by the

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

decoder to generate the acoustic model for a given language.

SPHINX TRAIN (Open source toolkit for speech recognition)

Training is performed when there is need to create an Acoustic model for a new language. Knowledge on the phonetic structure of the language should be there to perform the training. Once the training is done it creates the database and by running the sphinx train the speech recognition files can be created.

TRAINING ALGORITHM

Acoustic model is a file which contains statistical representation of each of individual sounds that make up a word. An acoustic model is created from a speech corpus using training algorithms. In Sphinx it is done using Sphinx train module. This part gives the output in the form of a configuration file. The parameters written in configuration file are used by the decoder to generate the acoustic model for a given language.

EXISTING SYSTEM

This approach should be capable to recognize the speech and convert the input audio into text. Likewise, this problem related to several problems. Speech recognition is an interesting application of digital signal processing which has real world applications. This method is also used in automation of many tasks which previously needed the human interaction, like identifying spoken commands to perform things like closing a door or switching on lights.

DE-METRIC

Complex speech patterns can be recognized as well. For instance, there are quite a few appropriate speech recognitions which can actually take up speech at decent speed and later convert it to the text format and hence no typing would be required to generate a document. Even after such successful software landing in the market however, current efforts are not yet meeting the 100% human speech recognition

PROPOSED METHODOLOGY

Tensor layer was replaced with single sigmoid hidden layer by Hutchinson, Deng

ISSN PRINT 2319 1775 Online 2320 7876

Research paper **© 2012 IJFANS. All Rights Reserved,** UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

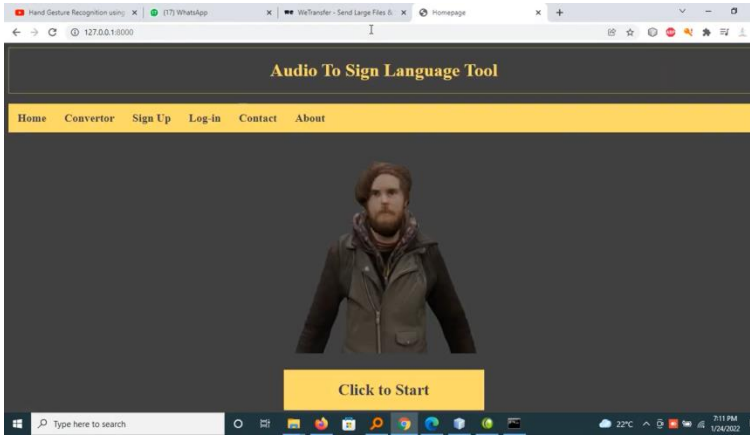
and Yu in the stacking networks. The performance was worst when the configuration in which only the bottom (first) layer was replaced with the DP layer. The performance was best and achieved more than 1% absolute reduction over the DNN when the configurations replaced the top hidden layer with the DP layer performs. This concludes the DP layers are suited to perform on binary features, consistent in findings from.

METRICS

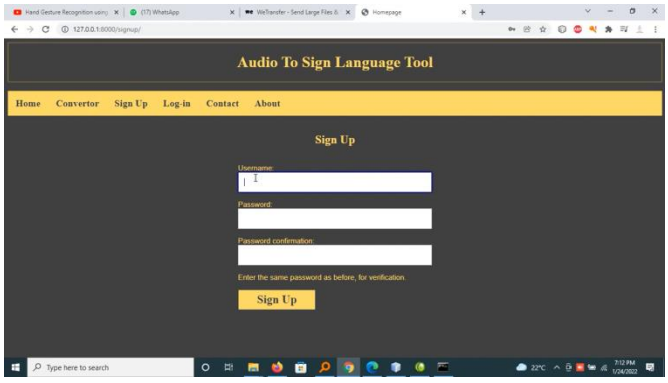
On a voice search task and the Switchboard (SWB) phone-call transcription task it is found that CD-DNN-HMMs have achieved 16% and 33% relative recognition error reduction over strong, discriminatively trained CD- GMM-HMMs.

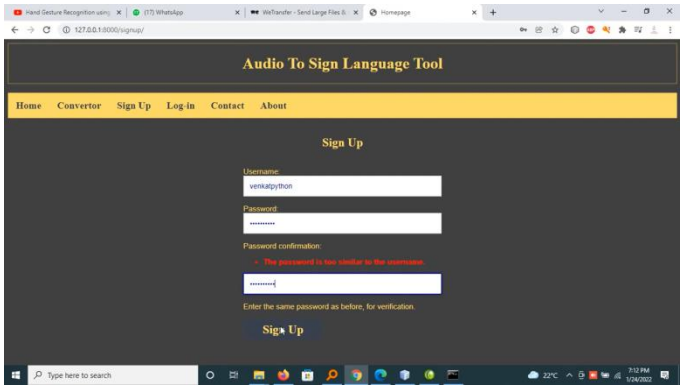
RESULTS EXPLANATION:

Home page



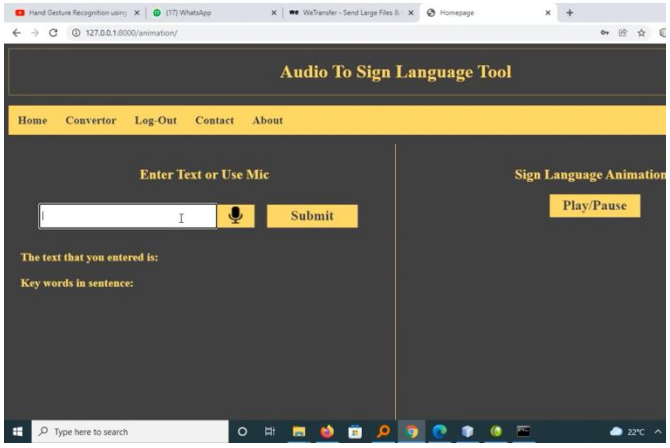
User registration

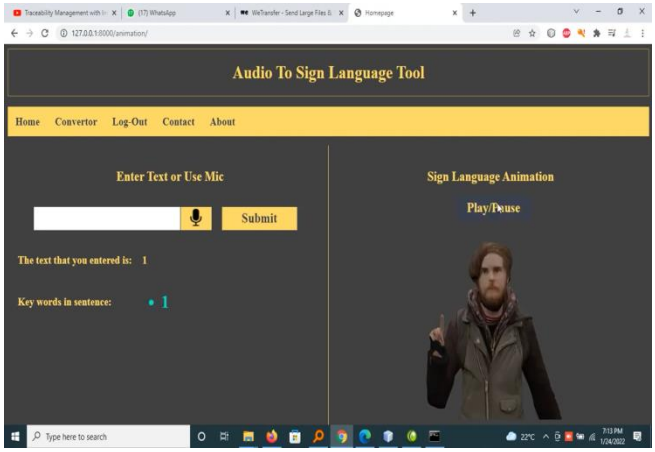


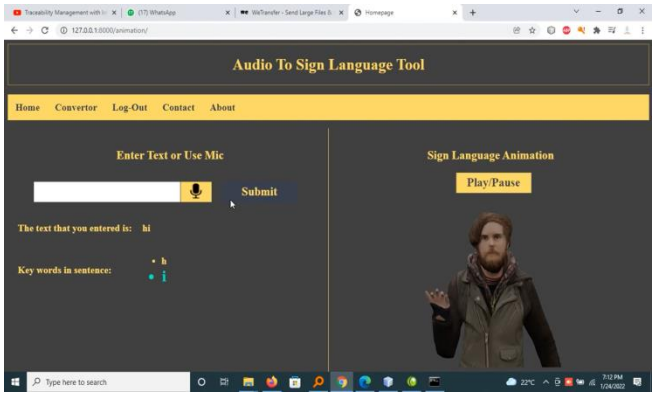


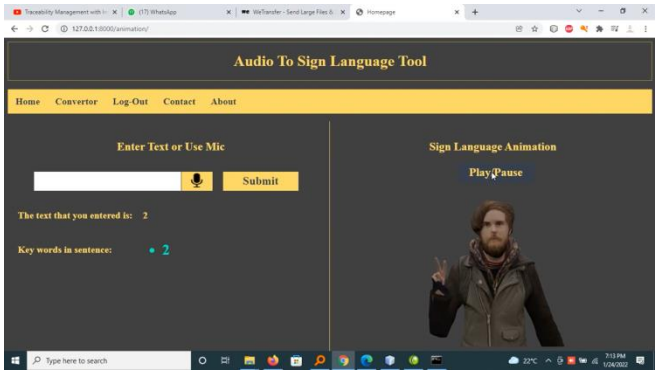
ISSN PRINT 2319 1775 Online 2320 7876

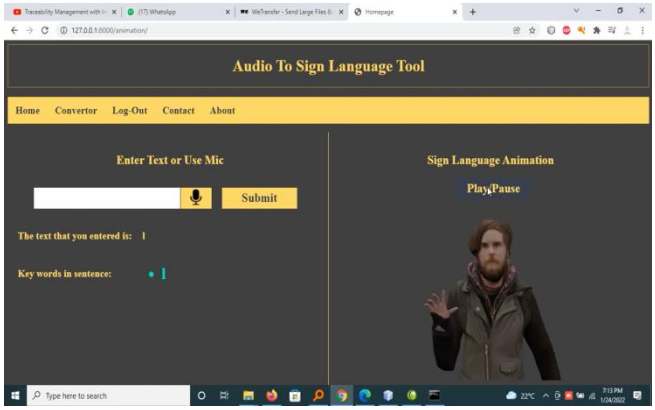
Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

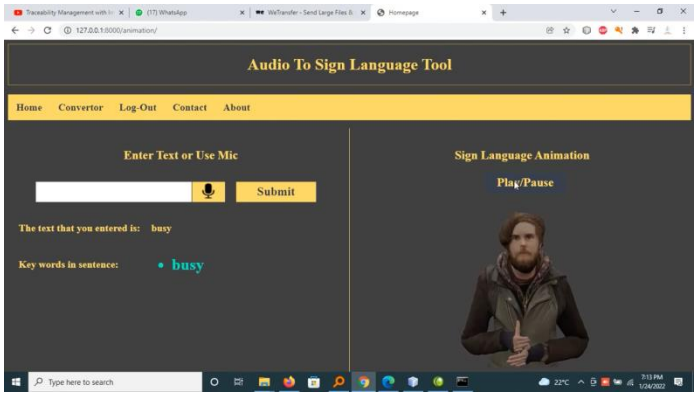






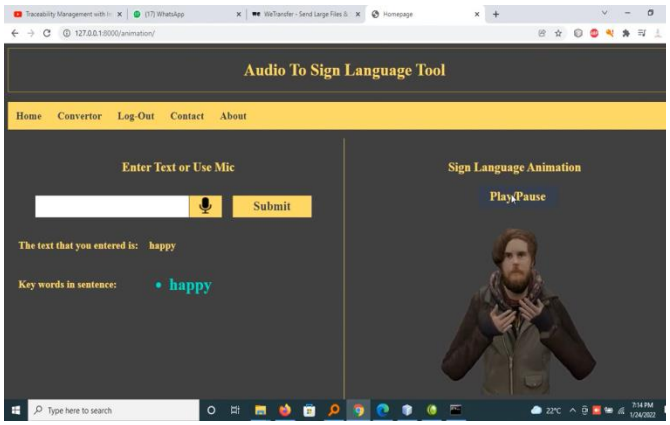


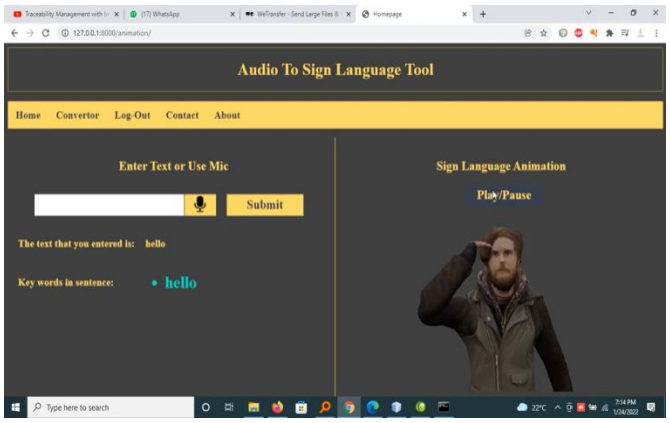


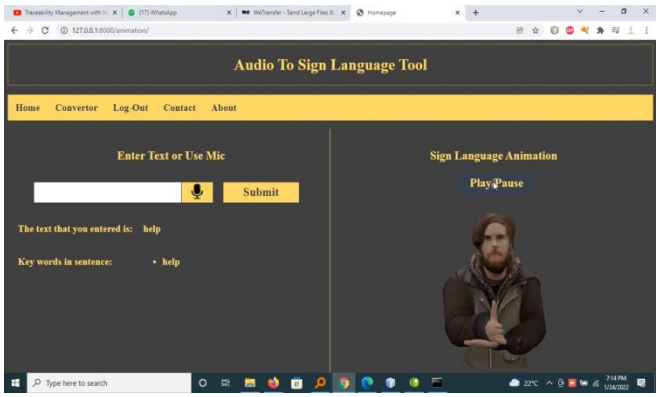


ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022







CONCLUSION

Sign language is one of the useful tools to ease the communication between the deaf and mute communities and normal society. Though sign language can be implemented to communicate, the target person must have an idea of the sign language which is not possible always. This was meant to be a prototype to check the feasibility of recognizing sign language. The normal people can communities with deaf or dumb using sign language and the text will be converted to sign images.

REFERANCES

1. Amit kumar shinde and Ramesh Khagalkar “sign language to text and vice versa recoganization using computer vision in Marathi” International journal of computer Application (0975-8887) National conference on advanced on computing (NCAC 2015).

2. Sulabha M Naik Mahendra S Naik Akriti Sharma " Rehabilitation of hearing impaired children in India"International Journal of Advanced Research in Computer and Communication Engineering.

3. Neha Poddar, Shrushti Rao, Shruti Sawant, Vrushali Somavanshi, Prof. Sumita Chandak "Study of Sign Language Translation using Gesture Recognition"

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 2, February 2015.

4. Christopher A.N. Kurz "The pedagogical struggle of mathematics education for the deaf during the late nineteen century: Mental Arithmetic and conceptual understanding" Rochester Institute of Technology, Rochester, NY USA. Interactive Educational Multimedia, Number 10 (April 2005), pp. 54-65.

5. Foez M. Rahim, Tamnun E Mursalin, Nasrin Sultana “Intelligent Sign Language Verification System Using Image Processing, clustering and Neural Network Concepts” American International University of Liberal Arts-Bangladesh.

6. Shweta Doura, Dr . M.M.Sharmab "the Recognition of Alphabets of Indian Sign Language by Sugeno type Fuzzy Neural Network"International Journal of Scientific International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-6, Issue-6, June 2020 ISSN: 2395-3470 www.ijseas.com 6 Engineering and Technology (ISSN : 2277-1581) Volume 2 Issue 5, pp : 336-341 1 May 2013.

7. Neha V. Tavari A. V. Deorankar Dr. P. N. Chatur" A Review of Literature on Hand Gesture Recognition for Indian Sign Language"International Journal of Advance Research in Computer Science and Management Studies Volume 1, Issue 7, December 2013.

8. Vajjarapu Lavanya, Akulapravin, M.S., Madhan Mohan" Hand Gesture Recognition And Voice Conversion System Using Sign Language Transcription System" ISSN : 2230-7109 (Online) | ISSN : 2230-9543 (Print) IJECT Vol. 5, Issue 4, Oct - Dec 2014.

9. Sanna K., Juha K., Jani M. and Johan M (2006), Visualization of Hand Gestures for Pervasive Computing Environments, in the Proceedings of the working conference on advanced visual interfaces, ACM, Italy, p. 480-483.

10. Jani M., Juha K., Panu K., and Sanna K. (2004). Enabling fast and effortless customization in accelerometer based gesture

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 12, Dec 2022

interaction, in the Proceedings of the 3rd international conference on Mobile and ubiquitous multimedia. ACM, Finland. P. 25-31.