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NEW FRAMEWORK OF VIRTUAL CLASSROOM FOR ENGLISH GENRES

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Abstract:

A virtual classroom is a digital learning environment that enables real-time interactions between teachers and students online. In order to allow educators to conduct live classes, virtual office hours, and discussions with students in an interactive environment, virtual classrooms use video conferencing, online whiteboards and screen sharing. This study has been done to make the genes of English literature environment into a centralized network to access the learners in an easy and more efficient manner by using WSN (Wireless Sensor Network).

Index Terms **– Genres, microcontroller, programming, protocol, transmitter.**

I. INTRODUCTION

Virtual Classroom is an online platforms that allow teachers and students to connect. Digital classrooms replicate the learning experience and feel of real classrooms to the use of various resources and features. It is a software that allows a person (teacher) to transmit live audio-visual information (courses) through the internet. In general, it also allows students to communicate with each other and the teacher through text messages sent through a dedicated chat window. It is a program that can be installed on almost any laptop or PC and includes basic computer and internet knowledge. A variety of virtual classroom apps are available online, each with its unique user interface, design, and functionality. It would be difficult, however, to tell which is the best virtual classroom program online available. Since each brings its own distinctive set of instruments, some can find one better than the others. Some of the most common and easy-to-use virtual classroom software available online to help us to pick the right virtual classroom software are BigBlueButton, Adobe Connect, Blackboard Collaborate etc. BigBlueButton is one of the FREE virtual classroom software available online. Despite being an open-source product, it has been thoughtfully designed while keeping in mind the needs of not only the teachers and the students but the schools as well. Adobe Connect is one of the most professional and popular virtual classrooms you can use, coming from one of the largest tech companies in the industry. If it comes to virtual learning and webinar software, it is a powerhouse, but it comes with a learning curve for every instructor. Blackboard Collaborate is a common custom-built virtual classroom program while keeping student and teacher requirements in mind. Since it's a web-based tool, it is simple, intuitive, and works across multiple platforms. Not only for the students but also the teachers, virtual classrooms have proven to be an invaluable addition to the education field. The benefits that a Virtual Classroom Program brings to the table are numerous. Although the value of virtual classrooms has multiplied since the outbreak of Coronavirus, making them a requirement rather than a privilege, many other benefits of virtual classrooms can be seen without a natural calamity lingering around.

Wireless technology developments have contributed to the widespread adoption of multimedia on wireless networks. The increasing popularity of multimedia networking technologies, such as e-learning, has created more online learning requirements for students in educational institutions. Although the current e-learning platforms promote student-teacher interaction, this master thesis project strengthens this virtual class that would be comparable to that of a real class scenario. However, contact between a student in the remote classroom and the teacher in the main classroom is mandatory to provide efficient learning. In this project, an automatic e-learning system is used to monitor a speaker in the classroom to improve this virtual classroom. The Wireless technology that consists of collecting tracks of audio and video sensors and identifies the speaker of interest in the classroom so that the lecturer can connect efficiently on the other end and can communicate with one by one.

II. RELATED WORK

There's a promising place for WSN in education. They can, on the one hand, serve as a platform for teaching other subjects, providing new opportunities both in the acquisition of knowledge and in the development of ubiquitous applications. The online availability of data collected by some research sensor networks, for example, has made it possible for projects such as The Gulf Stream Voyage[1] generated by CIESE to be implemented (Center for Innovation in Engineering and Science Education). This project aims to integrate real-time data into classrooms and, more importantly, helps students to explore the underwater current of the Gulf Stream by accessing many existing sources of data. Ubiquitous applications, on the other hand, enable learners to interact with the environment via sensor nodes placed in physical objects. This method has been followed by many studies, such as tracking and developing student study activities [2] or educating children with special needs [3]. A virtual hardware platform was developed by Lim et al.[4] that allowed students to make alterations to the system's (virtual) hardware and software components. This course, however, is not explicitly based on WSN and does not include an understanding of its particular design problems. It is also possible to apply certain e-learning techniques, such as remote laboratories [5] or virtual laboratories [6], to sensor networks. For example, Christou et al [7] documented the creation of a WSN remote teaching virtual laboratory, enhancing collaboration between remote students, and the implementation of distributed simulations.

III. PROPOSED METHODOLOGY

Multimedia based WSN is a new trend in the technology that provides remote mechanism for educational learning with multimedia effects. The favors from this type of learning are clear and apart from the traditional boundaries, deep traversal, better communication, efficient learning and enlighten the art of technologies. The method use a newly developed graphical user interface (GUI). Under this approach English literature students can easily learn the genre. Hardware implementation is based on the

- ATmega328 Microcontroller
- nRF Transmitter
- nRF Receiver

The ATmega328P is supported with a full suite of program and system development tools along with java programming. The good features and low cost makes the microcontroller a value for money option in this work. However, its performance is placed high. nRF is a radio transmission and receiver which consists of a fully integrated frequency synthesizer, a amplifier, a crystal oscillator, a demodulator, modulator and Enhanced Shock Burst protocol engine.

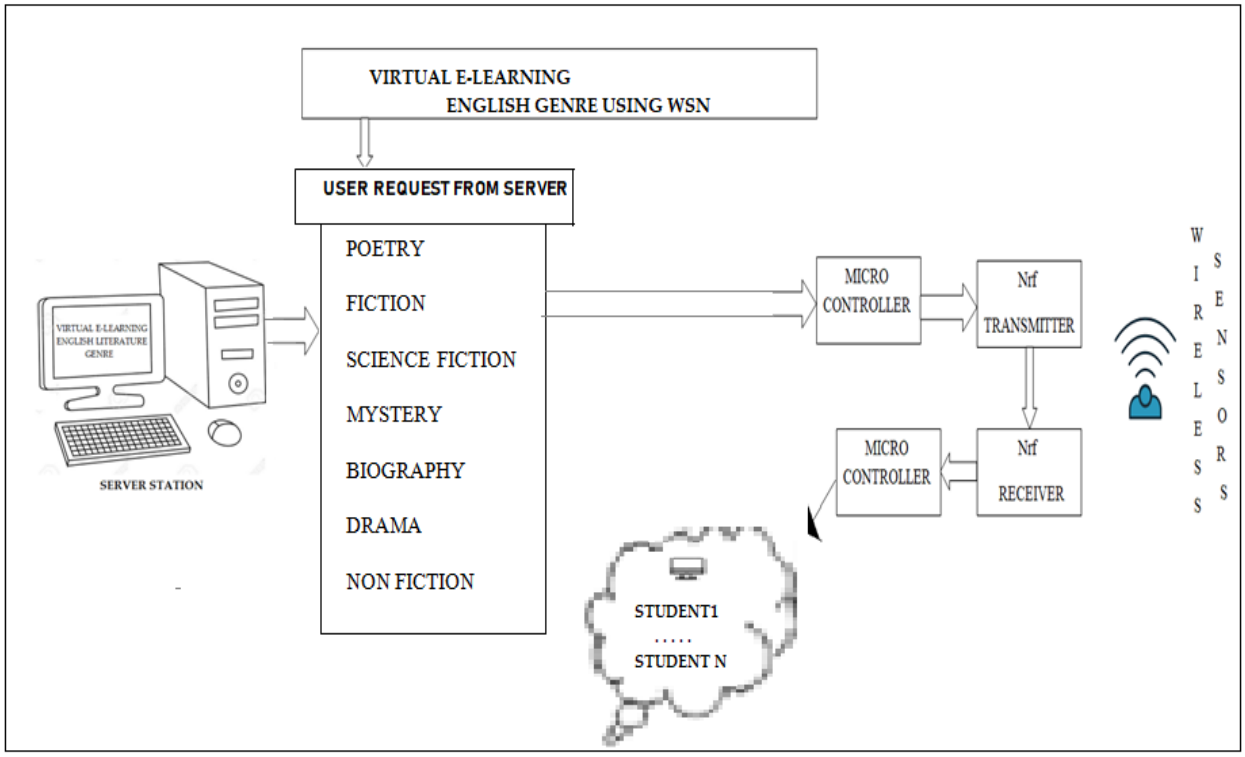

Figure 1 Architecture of Proposed System

In the research, the input for the system is obtained from the registered users. The information's are prepared by the use of a microcontroller. The nRF transmitter and receiver are implied in the work. By using wireless sensor node the data's are transferred. Followed by this procedure the received data's are manipulated by a microcontroller and the data is send to the registered users cloud. The poetry, fiction, science fiction, mystery, biography, drama and nonfiction are the input English genre selected by the learning user. The system consists of two sensor nodes and receiver node. The sensor nodes contain sensors and microcontroller. Sensors accept the data and pass it to the microcontroller. These entire sensors send the analog data to microcontroller. ATmega328 is the microcontroller implied in the experiment. A wireless network containing small interdependent sensor nodes called Wireless Sensor Network. This wireless sensor network system is very suitable to be used in virtual educational environment to reduce human errors, user cost and to provide more time to educational professionals to deal with other generic.

ALGORITHM

Input: User selection

P= POETRY; F = FICTION

S= SCIENCE FICTION; M = MYSTERY

B = BIOGRAPHY; D =DRAMA

N =NON FICTION

Output: English genre e- class to the registered user in the cloud

Let R = {CD, LLE, H, ApEn}

N= Integer Numerator
kw= Register size in bits
kn =the number of significant bits in the numerator, to be determined in real time.
D = Integer denominator, multiple bytes
Q =Integer quotient, multiple bytes (could be as large as N if D=1)
X =working register, same size as R
i =loop index, byte

1) If N=0, exit to special case, numerator=0
if D=0, exit to special case, denominator=0
account for negative values, if needed. This routine works only on + values

If N<D, set Q=0, and go to step 4, there is no integer part.
2) Determine kn, the number of significant bits in N,

N:=N<<(kw-kn)
Q:=0
i:=kn+1
3) i:=i-1
if i=0 then go to step 4
N:=N<<1

Shift one bit left

lsb:=0

carry:=msb
Q:=Q<<1 shift carry from the subtraction into lsb of Q
go back to 3 if carry is set from the subtraction step
goto 3
4) Now have integer quotient Q and remainder R. Stop if that is all we need.
N = Q*D

0<= D
N/D = Q + 0<=D<1
5) Now to find the binary representation find the powers of 1/2^m to z steps,
F:=0
D denominator (from above)
i:=z+1 initial index
6) i:=i-1
if i=0 then goto step (7)
S:=S<<1 shift S left one bit, 0 into lsb
X:=S-D subtract sets carry if D>S
complement carry carry is set if S>=D
F:=F<<1 shift carry into lsb of F; least sig bit set if S>=D
go back to 6 if carry is set from subtraction step
S=X replace S with (S-D)
goto 6
7) Now have fraction F, as approximation =F/(2^z)
We can look at this as the z binary digits to the right of the binary "decimal" point.
8) Convert F to decimal fraction, if desired.
F = F/(2^z) = F'/(10^y)
F':= F*(10^y)/(2^z)
9) SELECT two large prime number a and b.

10) Compute n=a*b the computed n is made public.

11) Compute f(n)=(a-1)*(b-1)

12) Choose a random number 'e' as the public in the range 1<e

13) Consider the user a needs to send a message to b

14) Now e is b's public key; since e is public;

a is allowed access to e.

15) For encryption the message m of which is in the range 0<M<N< IS converted to cipher.

16) The cipher text $C = M^e \bmod n$

17) The cipher text c is sent to b and a.

18) User b calculates the message with its private key β.

IV. RESULTS AND DISCUSSION

The inputs are obtained from the registered users. The data are processed by the using a microcontroller and nRF transmitter and receiver. By using WSN the data's are transmitted. The System is developed using java. In the educational platform the student's details can be monitored by the use of a server. In that we can add or remove the user and the user details can be viewed. The work focus on the adaptation of a visual programming environment that is very easy for students to use it. The methodology of the GUI is to allow students to define their concepts simply by dragging objects and connecting them to create an action. The experiment is executed in real time and the result obtained is given in table1.1

Genre	**Execution Time (Sec)**
Poetry	2.6
Fiction	2.3
Science Fiction	2.3
Mystery	2.6
Biography	2.2
Drama	3.6
Non Fiction	3.5

Table 1.1 Experimental Results

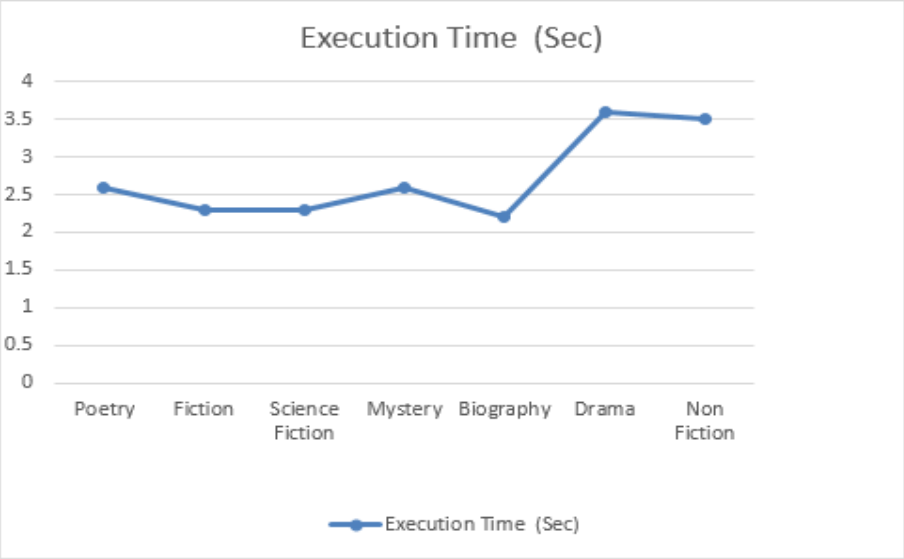

Figure 2 Implementation Graph

V. CONCLUSION

This research affords a software tool for along with WSN to help in teaching and learning English genre. This is based on the automated graphical usage. The application tool is considered as a positive aspect for helping English literature learners. The most excellent thing of this work is that it can be enhanced that is we can add any number of nodes. Experimentation has been performed for English genre only but with the same setup we call include more knowledge. This technology is fast and robust in nature.

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