WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Wireless Feedback Analytics System in Raspberry Pi

N. Saranya

MCA, Cuddalore

Parthiban Kannan

Chief Executive Officer, Aatomz Research

Mr. P. Anbumani MCA, M.Phil., NET

Associate Professor, Department of MCA

ABSTRACT

Evaluating customer feedback is one of the evaluation metrics to identify the performance of any product or service. However, getting feedback from the customer is a challenging process. Many people feel bored writing feedback and hate filling up the customer feedback form. Verbally asking for customer feedback will not give honest feedback. Hence there is a strong need for an active feedback system that is simple and attractive to the customers and encourages them to provide honest feedback. The author addresses honest feedback issue by providing a Raspberry Pi device to collect customer feedback anonymously in feedback analytics project. Also, the author discussing how it has improved the performance of a training service by building a data analytics dashboard

Introduction

The feedback collection and analysis has remained important subject matter since long. The traditional technique feedback collected questionnaire type. Sometime student does not give real feedback. Online feedback based on text which makes it hard to analyze. Main purpose to get the customer real feedback from the customer in easy way to address this problem a system that could automatically analyze customer feedback by using Raspberry. The feedback analytics system not only used in Training center but also in supermarket, shops etc. To get the real time feedback from the customer. Once feedback has been submitted student feedback stored in database the feedback can view and analysis by admin at any time.

Literature Review

A. IOT:

According to the paper, the student feedback and time of submission can be viewed. When one student submitted the feedback then it saved in the database. This paper is used to refer the student feedback, admin analysis the feedback. In this paper admin can view student feedback and delete feedback and developer will give username password for the admin. This paper deals how to generate the graph and which API may be used to refer. Author says this paper is used to refer how admin used to provide username password verified framework. The personality of the understudy giving input isn't uncovered to anybody not indeed, even the administrator.

The notion of smart arises from the smart city concept where anything, anywhere can be connected to the internet. These connected devices or things to the internet which has given an escalation to the internet, and this whole idea is called the internet of things (IoT). Author coded the words of Mark Weiser regarding technology as "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it". The term internet of things first, used by Kevin Ashton in the year 1999. There are many reviews by many researchers to define IoT in different ways like the internet of processes, internet of everything, the internet of anything and so on. According to author, it is the internet of anything, but it depends on requirements. According to Cisco IoT as IoW is a web of connected physical objects. Author defines internet of everything's (IoE) brings people, process, information, and things that are more relevant and valuable to make network connection and transforming this information into actions than ever before that create new capabilities, richer experiences, and unprecedented economic opportunities for businesses, people, and countries". Cisco uses the term Internet of Everything for both physical and virtual purpose.

B. IoT in education

Nowadays there are a lot of tools for educational purposes to makes it easier, smarter, and better, IoT is one of the tools amongst them. Here are some of the related works in this regard. IoT helps in education as a way for teaching, monitoring and for the research which makes the educational life easier and smart. As the author defines IoT that unify IoT in the academic environment as a new player which helps people's interaction both physically and virtually. According to IoT as a subject is highly exciting for student and to teach the concept of computer science, IoT is ideal as both aspects.

The Open University, UK introduced a new IoT –based course My Digital Life for the students of undergraduate in computer science department comprises of IoT concept based on its importance as a dynamic subject. This subject helps students how to utilize ICT as a tool and study to realize the IoT role in the real world. To build the fundamental concept of programming language IoT is used to teach the students. As a teaching tool IoT, according to it is used to teach English terminology with the help of trained IoT-based model uses voice and visual sensors for English learners to even out the pronunciation. IoT tool used for connecting the devices and make the work easier.

Some other system uses objects with tags and Learning Management System to compile information and analyze students' learning methods using learning analytics techniques personal computer, incredibly inexpensive, it concentrates on encouraging people in learning, its cost makes it more accessible to the people to those with low income or living in a poor residential area. Since our company is getting more reliable and more and more reliable on computers, it gets necessary to encourage such technology, blending it with IoT technology makes it more resourceful as ever.

C. Related work

Referable to the introduction of IoT, the traditional categories are now transforming in education. E-learning elements and levels have been under expanded weight because of reviewers and government in light of completion rates, prices, employment, and career preparation. The learning systems can be improved by using new approaches to decrease costs and enhance the end-to-end following of general learning [16]. In the IoT era, the students and teacher are associated and have full access all the time to talk about the issues and get their answers. The learning systems can be improved by using new approaches to decrease costs and enhance the end-to-end following of general learning [16]. In the IoT era, the students and teacher are associated and have full access all the time to talk about the issues and get their answers.

The use of new technologies makes a new move to a classroom where students are filled with the learning environment as discussed [18].to enhance the learning and teaching methods, the innovation is applied in a creative way in a situation [19]. Visuals is a very powerful tool for students which enhanced the students' skills, and it improves classroom learning and handling data by utilizing it [20]. To enhance student's critical thinking abilities visuals can be utilized to test the students to think on points [21]. By using different media technology creates possibilities for teachers to manage the issues of students with different learning styles [22]. By utilizing the smart whiteboard for learning process, the students' participation seems dramatically increases in the classroom. The innovation of cloud computing and IoT technologies geared up the open educational resources on mobile devices, which is radical from location dependent and time for learning concerns.

A background study is done to review similar existing systems used to perform student performance analysis. Three existing system are chosen because these systems are like the proposed system. A. Faculty Support System (FSS) Shana and Venkatachalam has proposed a framework named Faculty Support System (FSS) which is low in cost as it uses cost effective open-source analysis software, WEKA to analyses the students' performance in a course offered by Coimbatore Institute of Technology of Anna University. FSS can analyze the students' data dynamically as it is able to update of students' data dynamically with the flow of time to create or add a new rule. The update of new rule is possible with the help from domain expert and the rule is determined by data mining technique such as classification technique. Classification technique is used to predict the students' performance. Besides, FSS focus on the identification of factors that contribute to performance of students in a particular course. B. Student Performance Analyzer (SPA) SPA is existing secure online web-based software that enables educators to view the students' performance and keep track of the school's data. The SPA is a tool designed for analyzing, displaying, storing, and getting feedback of student assessment data. It is a powerful analyzer tool used by schools worldwide to perform analysis and displays the analysis data once raw student data is uploaded to the system. The analysis is done by tracking the student or class to get the overall performance of student or class. It helps to identify the students' performance which is below the expected level, at expected level or above the expected level. This would allow the educators or staffs to identify the current students' performance easily. Other than that, it enables various kinds of students' performance report such as progress report and achievement report to be generated. C. Intelligent Mining and Decision Support System (In Minds) In Minds helps University Malaysia Sarawak (UNIMAS) to monitor the performance of various areas in every UNIMAS's departments. The system enables top and mid-management in UNIMAS to have a clear look on the areas that needed attention by looking at the figures, revenues and risks. The features, ease of use and flexibility provided by the system makes the performance analysis in UNIMAS to be performed in an ideal solution. Charts are provided by the system for ease of student performance's interpretation. From the reviews on these existing systems, useful techniques and features could be applied into the proposed system for a better system's performance. The WEKA is chosen as a tool for data mining because it is open-source software.

D. Raspberry pi

Raspberry Pi, developed in the United Kingdom found by RASPBERRY PI foundation to promote smart learning and teaching base computer science among the youthful generation. Pi stands for python interpreter which is a programming language. In collaboration with a tech society Broadcom, they began producing the minicomputer boards in the year 2012. In the same year, the first Pi model was published. This credit card sized mini board computer can do many tasks what a standard desktop or a computer can do sans the size.

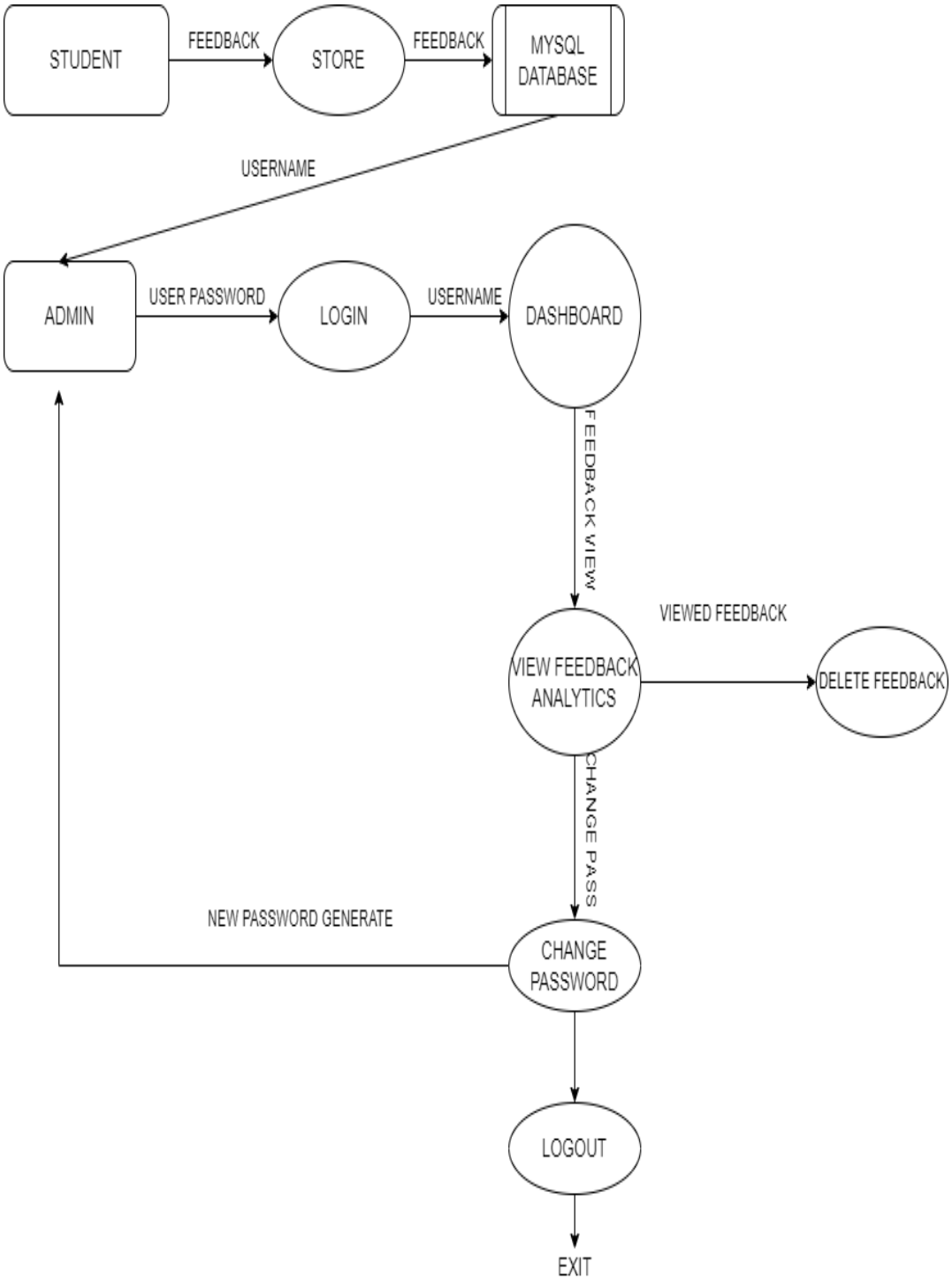
Raspberry Pi is a bare-bones personal computer, incredibly inexpensive, it concentrates on encouraging people in learning, its cost makes it more accessible to the people to those with low income or living in a poor residential area. Since our company is getting more reliable and more and more reliable on computers, it gets necessary to encourage such technology, blending it with IoT technology makes it more resourceful as ever

E. MySQL

SQL stands for Structured Query Language and is a widely used programming language for managing relational databases. You may have heard of the different flavors of SQL-based DBMSs. The most popular ones include MySQL, PostgreSQL, SQLite, and SQL Server. All these databases are compliant with the SQL standards but with varying degrees of compliance. Being open source since its inception in 1995, MySQL quickly became a market leader among SQL solutions. MySQL is also a part of the Oracle ecosystem. While its core functionality is completely free, there are some paid add-ons as well. Currently, MySQL is used by all major tech firms, including Google, LinkedIn, Uber, Netflix, Twitter, and others. MySQL is used for the Tkinter value stored in the MySQL database. It also connects with the Django framework to view and analysis the data

F. Django

Django (Holovaty& Kaplan-Moss, 2008) is a high-level Python Web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of Web development, so we can focus on writing our app without needing to reinvent the wheel. It's free and open source. Django's primary goal is to ease the creation of complex, database-driven websites. The framework emphasizes reusability and "pluggability" of components, less code; low coupling, rapid development, and the principle of don't repeat yourself. Python is used throughout, even for settings files and data models. Django also provides an optional administrative create, read, update, and delete interface that is generated dynamically through introspection and configured via admin models. The version of Django used during development is Django 2.1.5



First the process starts from the student providing their feedback. It stored in the MYSQL database then the admin login using the user password and the admin can be able to enter the dashboard. The dashboard contains feedback analytic, and the admin can change the password to new password providing the old password and enter new password and repeat it once again. Using the password again login using the new password the admin can only view and delete the feedback. The admin cannot be able to change the feedback.

In the Django admin page, the admin can also change the theme for the admin page. Admin can be logout after viewing the feedback analytics bar.

Module Description

Student Module1:

- Awesome
- Average
- Bad

Admin login module 2:

- Login:
- Username
- Password

Dashboard Module:

Dashboard:

- Pie Chart
- Trend chart

Existing System

Coming to the existing system is done by manually. In feedback existing system customer gives feedback about the owner based on online description feedback. Also, the feedback collected by yes or no form. It cannot used to get the real feedback from the student. The student sometimes feels bored for filling the feedback it takes lot time to give respond to the form. Some places it collected manually.

Disadvantages:

Collecting feedback using paper and pen

Proposed System.

The main objective was to create a unique and useful "online feedback analytics system with exceptional quality and services that differentiate it from other system. Online feedback analytics system is mainly created for overcome the existing system issues. Many people feel bored writing feedback and hate filling up the customer feedback form. The feedback analytics system is used for collecting the honesty feedback for the student and analyses the student how they feel about their courses and teaching from institution.

- ✓ Device
- ✓ Database
- ✓ Web page dashboard

Users are broadly classified into 2 categories: Student, Admin

The core functionality that is to be included in the system is as follows: Admin can update/delete the feedback analytics (But not insert feedback)

Student: only able to select the feedback

Approaches Towards Proposed

However, the entire organization is split into 3 modules- Database creation, preparing the dataset, Testing, sending data to Moodle as an annex.

1. Database Creation

- Get the student feedback from using touch screen display
- Get user feedback by simple press by the student
- Store the feedback in the MySQL database

Python is a programming language that works quickly and integrates systems more efficiently. It is a widely used general-purpose, high-level programming language. With its interpreted nature with smart syntax, it makes python as an ideal language for scripting and is easily extended with new function and data type that is implemented languages callable in C language. It was initially designed by Guido van Rossum in 1991 and developed by Python Software Foundation. It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code

Conclusion

The Student Feedback System portal was created to make it easier for educational institutions to process feedback. This takes a lot of time, effort, and paper labor when done manually. It is also possible to submit feedback freely and without hesitation. As a result, this portal overcomes all these obstacles and provides valuable assistance at every level of the leave application procedure.

Reference

1. V. R. Naidu, B. Singh, R. Hasan and G. A. Hadrami, "Learning Analytics for Smart Classrooms in Higher Education," International E-Journal of Advances in Education, vol. 3, no. 8, pp. 440-446, 2017.
2. C. B. Chew, M. Mahinderjit-Singh, K. Chiang, W. Tan, W. Sheng, M. H. Husin, N. Hashimah and A. Hassain, "Sensors-enabled Smart Attendance Systems Using NFC and RFID Technologies," International Journal of New Computer Architectures and their Applications (IJNCAA), vol. 5, no. 1, pp. 19-28, 2015.
3. A. R. Atabekov, "Internet of Things-Based Smart Classroom Environment," Master of Science in Computer Science Theses, US, 2016.
4. C. B. Kumar, A. Potnis and S. Gupta, "Video conferencing system for distance education," in 2015 IEEE UP Section Conference on Electrical Computer and Electronics (UPCON), Allahabad, India, 2015.
5. G. Singh, A. Chitransh and G. Tanwar, "Monitoring ambient light conditions of a school using IoT," in 2016 3rd International Conference on Computing for Sustainable Global Development (INDIACom), New Delhi, India, 2016.
6. N. Gligorić, A. Uzelac and S. Krco, "Smart Classroom: Real-time feedback on lecture quality," in 2012 IEEE International Conference on Pervasive Computing and Communications Workshops, Lugano, Switzerland, 2012.
7. M. Weiser, "The Computer for the 21st Century," SIGMOBILE Mob. Comput. Commun. Rev., vol. 3, no. 3, pp. 3-11, 1999.
8. C.-E. CORNELL, "The Role of Internet of Things for a Continuous Improvement in Education," Hyperion Economic Journal, vol. 2, no. 3, pp. 24-31, 2015.
9. S. Barakat, "Education and the Internet of Everything," International Business Management, vol. 10, no. 18, pp. 4301-4303, 2016.
10. J. Marquez, J. Villanueva, Z. Solarte and A. Garcia, "IoT in Education: Integration of Objects with Virtual Academic Communities," New Advances in Information Systems and Technologies, pp. 201-212, 2016.
11. J. Chin and V. Callaghan, "Educational Living Labs: A Novel Internet-of-Things Based Approach to Teaching and Research," in 2013 9th International Conference on Intelligent Environments, Athens, Greece, 2013.
12. Y. Wang, "English interactive teaching model which based upon Internet of Things," in 2010 International Conference on Computer Application and System Modeling (ICCASM 2010), Taiyuan, China, 2010.
13. H. Cheng and W. Liao, "Establishing an lifelong learning environment using IOT and learning analytics," in 2012 14th International Conference on Advanced Communication Technology (ICACT), PyeongChang, South Korea, 2012.
14. S. Y. B. Saheb, G. A. Mueed, H. Choudhary and Z. Ansari, "IoT Based Lecture Delivery System Using Raspberry Pi," International Journal of Advanced Research in Computer Engineering & Technology, vol. 6, no. 3, pp. 245-247, 2017.
15. S. P. Mathews and D. R. Gondkar, "Solution Integration Approach using IoT in Education System," International Journal of Computer Trends and Technology (IJCTT), vol. 45, no. 1, 2017.
16. P. D. S. Charmonman, P. Mongkhonvanit, V. N. Dieu and N. v. d. Linden, "Applications of Internet of Things in Elearning," International Journal of the Computer, the Internet and Management, vol. 23, no. 3, pp. 1-4, 2015.
17. D. Laurillard, Rethinking University Teaching: A Conversational Framework for the Effective Use of Learning Technologies, Psychology Press, 2002, 2002.
18. K. A. Renninger, S. Hidi and A. Krapp, "The Role of Interest in Learning and Development," The American Journal of Psychology, vol. 107, no. 2, pp. 319-323, 1994.
19. N. Ali, "Students' Perceptions about use of Multimedia Projectors for Information Transfer in Class Room," Advances in Health Professions Education, vol. 1, no. 2, pp. 70-73, 2016.
20. W. D. Beeland, "Student Engagement, Visual Learning and Technology: Can Interactive Whiteboards Help?," Action Research Exchange, vol. 1, no. 1, 2002.

21. H. Al-Sakran, " An Agent-based Architecture for Developing E-learning System," Information Technology Journal , vol. 5, no. 1, pp. 121-127, 2006.

22. K. U. Sarker, A. B. Deraman and R. Hasan, "Descriptive Logic for Software Engineering Ontology: Aspect Software Quality Control," in 2018 4th International Conference on Computer and Information Sciences (ICCOINS), Kuala Lumpur, Malaysia, 2018.

23. S. M. Alessi and S. R. Trollip, Multimedia for Learning: Methods and Development, Pearson, 2000.

24. L. Chen, G. Feng, J. Joe, C. W. Leong, C. Kitchen and C. M. Lee, "Towards automated assessment of public speaking skills using multimodal cues," in Proceedings of the 16th International Conference on Multimodal Interaction, New York, NY, USA, 2014.

25. S. Jabbar, F. Ullah, S. Khalid, M. Khan and K. Han, "Semantic Interoperability in Heterogeneous IoT Infrastructure for Healthcare," Wireless Communications and Mobile Computing, 2017.

26. R. Hasan, S. Palaniappan, A. Razif, S. Mahmood and K. U. Sarker, "Student Academic Performance Prediction by using Decision Tree Algorithm," in 2018 4th International Conference on Computerand Information Sciences (ICCOINS), Kuala Lumpur, 2018.

27. M. Reisert and H. Burkhardt, "Complex Derivative Filters," IEEE Transactions on Image Processing, vol. 17, no. 12, pp. 2265-2274, 2008.

28. S. A. Hussain, R. Hasan and S. J. Hussain, "Classification and Detection of Plant Disease using Feature Extraction Methods," International Journal of Applied Engineering Research, vol. 13, no. 6, pp. 4219-4226, 2018.

29. V. R. Peddigari, P. Srinivasa and R. Kumar, "Enhanced ICA based Face Recognition using Histogram Equalization and Mirror Image Superposition," in 2015 IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, USA, 2015

30. P. Ekman and W. V. Friesen, Facial Action Coding System, Consulting Psychologists Press, 1978, p. 233

31. Salman Mahmood Department of Information Technology Malaysia University of Science and Technology Selangor, Malaysia