

Envision-An Augmented Reality App for System Configuration Detection

Madhura Arun¹ Nikhil B P² Nisarga G³ Ashwani Kumar Singh⁴ Satish B Basapur⁵

^{1,2,3,4}U.G Student ⁵Assistant Professor

^{1,2,3,4,5}Dr. Ambedkar Institute of Technology, Bangalore, Karnataka, India

Abstract— Augmented reality application applications annotate real world with computer generated graphics. They make the surrounding environment interactive by overlaying Digital 3D models or some plain text information over and around the tangible objects in its radius. The Augmented Reality Mobile Application “Envision” is a customized application for the Department of Information Science and Engineering of Dr.Ambedkar Institute of Technology, Bangalore- 560 056.It is an attempt to engage students of the department in a digital environment by giving them an opportunity to interact with the teacher, know more about the Systems of the laboratories, know more about the Weekly updates regarding the latest technologies and learn more through a digital medium being Augmented Reality.

Key words: Envision, Augmented Reality

I. INTRODUCTION

Augmented reality is the integration of digital information with the user’s environment in real time. Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it. Augmented reality is a technology that works on computer vision based recognition algorithms to augment sound, video, graphics and other sensor based inputs on real world objects using the camera of your device. It is a good way to render real world information and present it in an interactive way so that virtual elements become part of the real world. Augmented reality displays superimpose information in your field of view and can take you into a new world where the real and virtual worlds are tightly coupled. It is not just limited to desktop or mobile devices.

The goal of the Envision Project consists in developing and deploying an Augmented Reality system that will assure a multitude of services, directed to the smartphone medium. These services will allow users to interact with multimedia layers (images, sounds, video, text, animations) superimposed, to the image captured by the smartphone camera. Envision is a mobile application that has been created in interest of the Students and Teachers of Department of Information Science and Engineering, Dr. Ambedkar Institute of Technology, Bangalore-560056. The features of Envision include detection of system configuration, a friendly and interactive interface for introduction of all the teachers of the Department and Weekly news updates with the help of Augmented Reality technology.

With the help of Envision, a student will only have to open the application and point the camera to the Envision scanning points. The scanning points will include QR codes present near the computers of the laboratory, the notice board of the Department.

II. PROPOSED SYSTEM

The proposed system of Envision Application will consist of features such as obtaining information of regarding the

system’s configuration, introduction system for teachers, automation of weekly updates and learning by means of Augmented Reality. The application consists of scan points. When they are scanned, the above features will be exhibited accordingly.

III. SYSTEM ARCHITECTURE

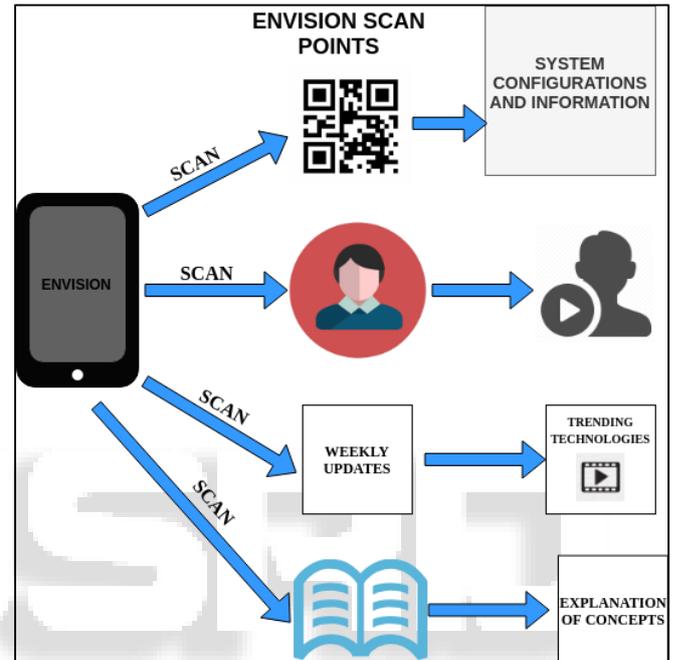


Fig. 1. System design

The system architecture is as follows,

Envision Mobile Application: Envision mobile application is being created by using Unity along with Vuforia libraries, Unity gives users the ability to create games and experiences in both 2D and 3D, and the engine offers a primary scripting API in C#, for both the Unity editor in the form of plugins, and games themselves, as well as drag and drop functionality. Vuforia libraries are used to create Augmented Reality Camera and Augmented Reality Images, they are used to create target images which will result in a database licence key. Each license key can store maximum up to 25 images or videos.

Envision Scan Points: They are the target images are being scanned with the help of Envision Mobile Application. Once the application is opened, the welcome page is displayed and with a button called SCAN. Once the button is clicked, the Vuforia camera turns on; it uses mobile camera to scan the required images and augments the related information about it. Once the target image is added to the database we get the image quality based on rating out of five. The more the rating, the easier the images or videos augment quickly. The images or videos are being specified with a required dimension when being added to the database. Based on that measurement our images and videos are augmented correspondingly.

Videos of Teachers Introducing Themselves: At the entrance of our department, we have placed a board which contains all the photos of our teaching and non-teaching faculty members. Once the user opens our application and scans our faculty members, the short information is being augmented on the users mobile phone screen.

System Configurations: When it comes to big enterprise system, each and every employee will be assigned a system based on his role. When an audit process happens, the auditor to check the system performance and configurations has to turn on the system, then login and then check the required information. We have pasted unique QR codes for each system on the desk where computer/laptop is being placed. Upon scanning different QR codes, the information about the system is being augmented.

Weekly Update Regarding Trending Technologies and News around the world: In the department notice board, QR code is placed. When the user scans the QR code all the weekly update regarding trending technologies are augmented on the users display. For example technologies used in phones or flagships published by companies. It might also be the software updates which would be releasing, their pros and cons. The new devices related to IOT and Artificial Intelligence, the proposals, the articles related to it. When the user scans the bit of newspaper, he/she will see a video regarding the news augmented on the image.

Learning: Our application is a student friendly application for student. When the student scans a circuit or block diagram from a textbook, a 3D circuit is augmented with its explanation.

IV. EXPERIMENTAL RESULTS & SCREENSHOTS

The Envision Scan Points are subjected to the Department of Information Science and Engineering, Dr.Ambedkar Institute of Technology, Bangalore- 5600 056. They are present on the Lab systems and on the notice board.

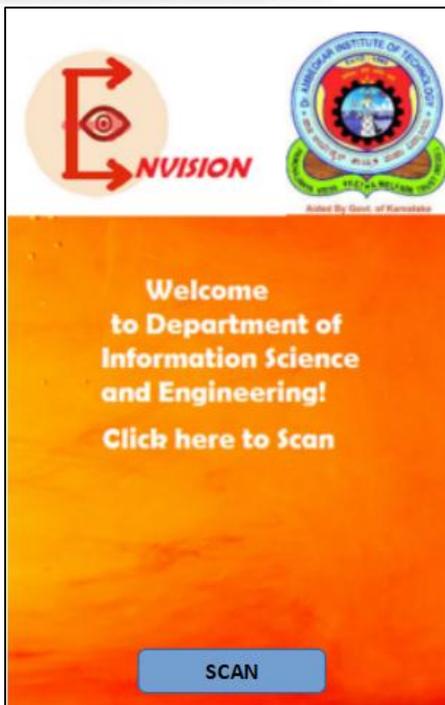


Fig. 2: Home page



Fig. 3: Video of teacher's introduction being augmented

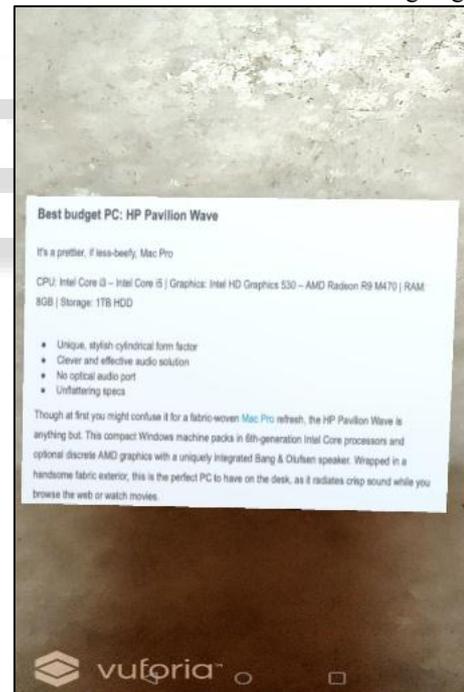


Fig. 4: System Configuration is augmented



Fig. 5: Video of the latest news is augmented

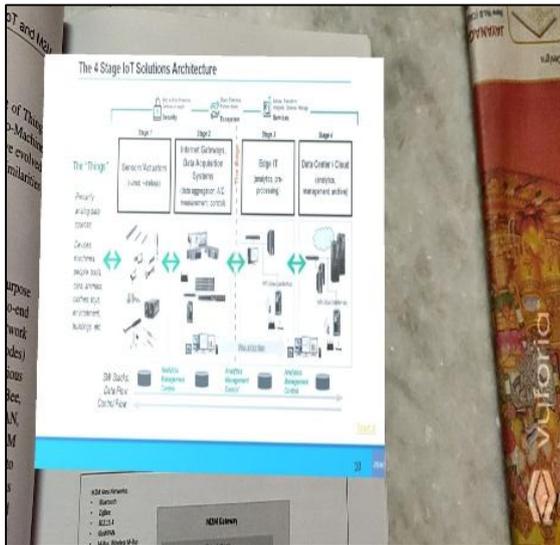


Fig. 6: Explanation of the Block Diagram is augmented

V. CONCLUSION

This Project, Envision is an augmented reality mobile application that is aimed at automation, learning and digital environment enhancement of Department of Information Science and Engineering, Dr.Ambedkar Institute of Technology, Bangalore-560 056. Through this application a student will be able to learn through weekly updates of the trending technologies, automation of teacher's introduction and display of system configuration with the help of Augmented Reality technology.

ACKNOWLEDGMENT

We would like to convey our sincere and heartfelt thanks to our college, Dr Ambedkar Institute of Technology and the Department of Information Science and Engineering for providing us a platform to conduct this project work. We are very grateful us with such an opportunity.

We thank our Principal, Dr C. Nanjundaswamy for the encouragement provided to students to develop innovative projects.

We are grateful to Dr. M.V.Vijayakumar, Professor and HOD of the department of Information Science and Engineering for the support given to proceed with the work.

The project could not have been completed without our guide Mr. Satish B Basapur whose constant support, endurance, constructive guidance and valuable suggestions have helped us a lot to improve this work, without which the success of this project would be an impossible task.

REFERENCES

- [1] Sidharth Sunil , Smitha Sunil Kumaran Nair , “ An Educational Augmented Reality App To Facilitate Learning Experience” ,International Conference on Computer and Applications (ICCA) , 2017
- [2] Luke Benjamin Cassar , Frankie Inguanez , “ARC: Augmented Reality for Catering “,IEEE 8th International Conference on Consumer Electronics - Berlin (ICCE-Berlin), 2018
- [3] Dennise Adrianto , Monica Hidajat , Violitta Yesmaya , “ Augmented reality using Vuforia for marketing

- residence “,1st International Conference on Game, Game Art, and Gamification (ICGGAG) , 2016
- [4] Cheng-Hung Lin , Yang Chung , Bo-Yung Chou , Hsin-Yi Chen , Chen-Yang Tsai , “A novel campus navigation APP with augmented reality and deep learning “, IEEE International Conference on Applied System Invention (ICASI) , 2018
- [5] Rong-Chi Chang , Zeng-Shiang Yu , “ Application of Augmented Reality technology to promote interactive learning “ ,International Conference on Applied System Innovation (ICASI) , 2017
- [6] Ryan Kyaw Thu Aung Ba , Yiyu Cai , Yunqing Guan, “Augmented Reality Simulation of Cardiac Circulation Using APPLearn (Heart)”, IEEE International Conference on Artificial Intelligence and Virtual Reality (AIVR) , 2018