Eventify: Smart RFID system for lead generation and event management

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***Abstract*—We have built a smart RFID based tracking system which tracks the movement of people in an event center and provides the organizers with meaningful insights about execution of the event and enables them to generate marketing leads, which is sold out to the vendors who had set up stalls at the event. We have also created a mobile application which helps attendees scan QR codes placed across the event center, helping them get all the relevant information about a speaker inside a room without having to enter each one.**

Keywords—RFID, automation, tracking system, lead generation, QR Code, mobile web application

I. Introduction

Organizers of all large Conventions, Conferences and Trade Fairs face the perennial problem of tracking the movement of people between different rooms in an event for extracting meaningful insight from it. Also, in events, attendees tend to get confused due to many events concurrently going on at the location. Our motive is to provide a one-stop solution to this with an innovative application of RFID systems in which readers will be strategically placed throughout the various event rooms capturing and tracking each attendee's activities. Attendees will have a mobile web application that will present real-time details of the entire conference and the ongoing event in the room that he is currently present. After the conclusion of the event, the system will generate a report for the organizers with lead details for each vendor and review the performance of a guest speaker or lecturer. The report will also contain other key details like how many attendees visited a room, how much time they spent in it thereby revealing a list of potential customers for vendors at the event.

II. Software used

A. Arduino IDE

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software

B. React and NodeJs

React is a JavaScript library for building user interfaces. It makes it painless to create interactive UIs. Design simple views for each state in your application and React will efficiently update and render just the right components when your data changes. As an asynchronous event-driven JavaScript runtime, Node.js is designed to build scalable network applications.

C. MongoDB Database

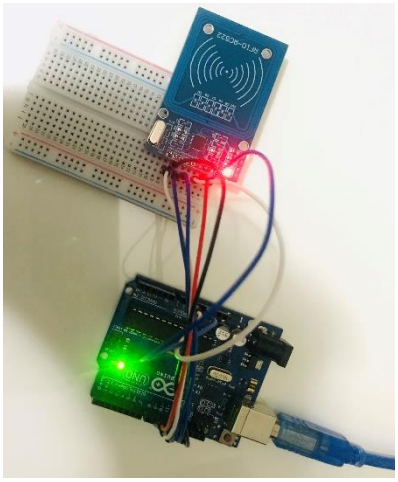
MongoDB is a cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with schema.

D. Apache Cordova

Apache Cordova is an open-source mobile development framework. It allows you to use standard web technologies - HTML5, CSS3, and JavaScript for cross-platform development. Applications execute within wrappers targeted to each platform, and rely on standards-compliant API bindings to access each device's capabilities such as sensors, data, network status, etc.

III. Hardware used

We used Arduino Uno, MFRC522(RFID Reader), RFID tags, LED bulb, breadboard and jumper wires.



IV. Approach

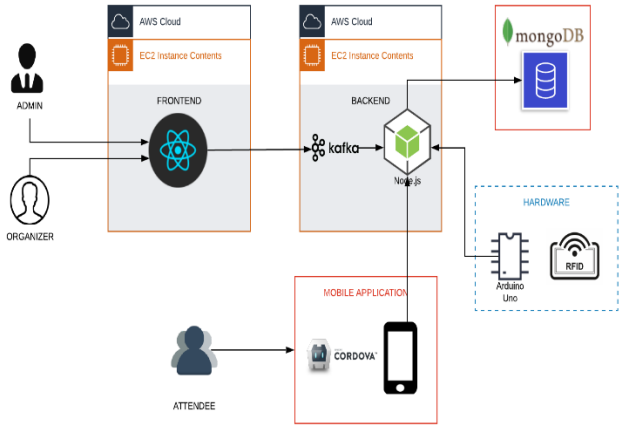
We used Arduino Uno for connecting the MFRC522 RFID reader with the MongoDB database server using a python script. We built a website using React for the frontend and Node.js for the backend server which handles the REST API calls. The website has different access modes for organizers and the Eventify team respectively. Eventify team will have the admin access and will be able to add organizers and events as and when required. The organizers will be able to add the

event description and will be adding the vendors who will host stalls in their event.

We made a mobile web application which will be used by the attendee to scan QR Codes installed throughout the event center to get the event details and speaker information without having to enter the event hall. We used Apache Cordova to make this application, it enabled us to do very fast prototyping. Having captured all the data by tracking the attendees we are able to perform analytics and extract useful insights and outcomes which are of interest to the vendors and thereby generate marketing leads for them at the end of any event. Final report generated is presented graphically on the website dashboard.

V. Architecture

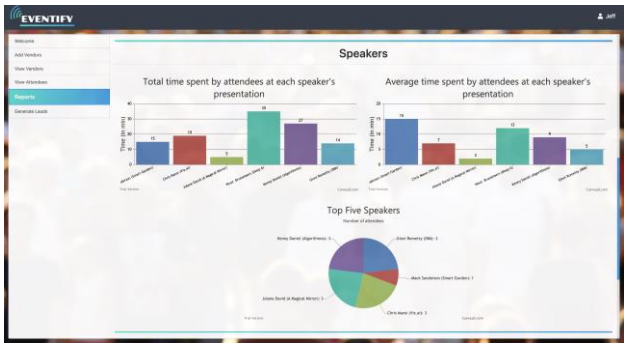
Below given is the architecture diagram of our circuit connections.



VI. Features

A. Marketing Lead Generation

The vendors will get a detailed analysis about the engagement of people on their specific stalls and will also get a list of people who are more likely to be their potential customer based on the amount of time they spent at the stall. The vendors will also be able to know the attendees who visited their stalls more than once hence giving them a list of target customers.



B. Efficient Event Management

The analysis performed on the collected data helps the event organizers to estimate the number of people they will be handling the next time and what resources will be needed for smooth execution of the event.

C. Convinient Navigation for Users

The attendees will be able to easily navigate through the event center with the help of mobile app as they can get details of the speaker at the venue by just scanning the QR.

VII. Future Work

We plan to switch to contact less RFIDs in future which will make this system more intuitive and natural. We also plan to provide vendors with analysis based on their own pre decided metrics specific to their needs and demands.

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The GitHub link for this project:

https://github.com/SJSUFall2019-CMPE272/Eventify

References

[1] https://www.arduino.cc/en/main/software

[2] https://reactjs.org/

[3] https://www.mongodb.com/

[4] https://cordova.apache.org/