IOT Trendz Project Report

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Introduction
With every breath technological entrepreneurs take, a new idea is pitched. Keeping up with these everyday breakthroughs can be tough. In less than 10 years we have witnessed the launch of yet a new wave, Web 3.0. Components of this breakthrough are still new and not many people are familiar with these concepts. In order to seize the opportunity to inform individuals, we created a website that was focused on the area of Internet of Things.

Internet of Things is a vision that was introduced in 2009. This vision encompasses the idea of connecting all devices and gadgets to the internet. The Internet of Things is truly changing our world. It is enhancing our lives, businesses, health and society as a whole by developing products which would ease our life. It is estimated that by 2020, 50 billion devices will be connected to the internet and the market will be worth $14 trillion.

System objective
The objective was to create a website for devices related to internet of things. Website primarily focuses on providing information to researchers and technical enthusiasts in this field. Analytics was carried out to provide in-depth information about various categories in this field. Internet of Things market would be worth $14 trillion by 2020 and so hackers would be increasingly interested into it. To provide information regarding security we integrated Hacker Web and Shodan.

Market landscape
Target Market:
Currently we have identified IOT researchers as our primary market, and tech enthusiasts as our secondary market.

We have identified IOT researchers as our primary market, as they would find the convenience of having all information relating to Internet of Things on our site. Additionally, the analytics that are providing, would prove valuable during their research.

Furthermore, tech enthusiasts are always looking for the next big thing related to technology. Our website would provide them with information in one platform, without having to browse through various websites to track the latest news and products.

Competitors:
While there are several websites relating to Internet of Things, we did not find any website that provided the same features that we are currently providing in our website. Currently there are only a couple of websites that feature similar features to our website. We have identified the following websites as potential competitors:

1. IOT List (www.iotlist.com)
**IOT List:**
This website is basically an ecommerce website that focuses on selling IOT devices. The website currently shows a picture of the device, description, and an option to purchase the device.

**Cisco Internet of Things:**
This is a page found on the Cisco website that talks about Internet of Things. There is some information regarding IOT, but the main focus is to advertise Cisco IOT products and services.

**Marketing Plan**
We plan on utilizing social media as a medium for marketing our website. We have found that there is a good amount of interest in regards to IOT on various social media sites. For example we noticed IOT was trending on Twitter a couple of weeks ago. Additionally, we found a number Tumblr accounts (For example: [http://internetofth.tumblr.com/](http://internetofth.tumblr.com/)) that focus on IOT. We believe through these accounts we could generate traffic to our website.

**System Design**
In order to develop an informational website like this, we decided to use the MVC (Model View Controller) controller design for our project. As we all know that our application is based on JAVA/J2EE, we have developed the front-end using JSP (View). The Controller is the IOTServletController.java file which processes the request and response as directed by the Tomcat Server. The Model is the flow of information between the server and the application. Additionally, we have deployed our website on the Amazon EC2 server, which takes care of handling various client (Client) requests through the Internet. We will discuss detailed description of the following topics under System Design:

1. Architecture
2. APIs
3. Analytics

**Architecture:**
As you can see from the diagram above, we have implemented 11 APIs and our application is hosted on the Amazon EC2 server. The user requests the webpage by directly hitting the website URL and the Amazon server in return accesses the following APIs to fetch the required content. Also, Amazon server connects with Tableau software to fetch some analytics which will be discussed in detail in the following section. Our website also integrates well with the mobile version which displays the same content as the Internet version.

APIs

As discussed earlier, we have included 11 APIs in our website. The following table will illustrate the functionalities of the respective APIs:

<table>
<thead>
<tr>
<th>API</th>
<th>Functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>YouTube</td>
<td>Provides the capability to look through various videos for IOT</td>
</tr>
<tr>
<td>Twitter</td>
<td>Enables the user to look through latest IOT TrendZ</td>
</tr>
<tr>
<td>Facebook</td>
<td>Like or Share the comment on our Facebook Page</td>
</tr>
<tr>
<td>Google Patents</td>
<td>Browse through various patents available for IOT</td>
</tr>
<tr>
<td>Instagram</td>
<td>Provide some snaps/videos talking about IOT</td>
</tr>
<tr>
<td>Tumblr</td>
<td>Allows the user to look through various IOT events</td>
</tr>
<tr>
<td>FEEDZILLA</td>
<td>Latest news feed about Internet of Things</td>
</tr>
<tr>
<td>SHODAN</td>
<td>Used in Analytics to determine the location of the machines connected to IOT</td>
</tr>
<tr>
<td>Amazon</td>
<td>Browse through various IOT products</td>
</tr>
<tr>
<td>Google Custom Search</td>
<td>Search about anything with Custom Search option</td>
</tr>
<tr>
<td>Google Translate</td>
<td>Multilingual feature to translate into any language</td>
</tr>
</tbody>
</table>
Analytics

For Analytics we have used Tableau software. In this section, we are analyzing the various tweets related to Internet of Things. We have also developed a Word Cloud out of 10,000 tweets which we have analyzed. Currently, there is no live connection between Tableau and our application, but in the future, we are trying to take live tweets and analyze those tweets.

As you can see from the diagram above, there is Word Cloud formed from the Twitter data analysis. As per our research ‘Google Glass’ is the most frequent IOT product which is being talked about in the Twitter. Additionally, Shodan Maps show in how many locations, Smart Camera is being installed. When someone clicks on the link, the details of the particular item gets opened up in a separate window telling the details of the item selected.

Novelty

Since ‘Internet of Things’ is new to the general public and many people are not aware of this topic, we have chosen this topic so as to educate the people about the Web 3.0 feature. The basic novel idea is to understand the general trend of the Internet of Things and try to develop the website so the general public is targeted. There are a lot of novelty ideas:

One Stop Website

We have incorporated all the general ideas about the Internet of Things. Like for e.g., general public can view the products related to Internet of Things, watch videos on YouTube, learn about the Internet of Things, connect with the Facebook group, share their ideas, and look for latest trends in the Twitter etc. This website is an informational website for those who want to learn more about the Internet of Things.
Twitter Sentiment Analysis

Apart from targeting the general public, we have also taken into consideration the researchers. In today’s world, Internet of Things is completely a new technology. Hence researchers would be more interested in the latest trends of IOT. The analytics part of the website mainly focusses on the researchers. It provides them an option to view the latest trends in the twitter, look for IP machines connected to Internet of Things through Shodan, and analyze the comments provided by Hacker Web and many more things.

Cloud System

Our complete website is hosted on the Amazon EC2 server. This will provide the user to visit our website from any machine provided that it supports the internet. Additionally, the website could be easily scalable to incorporate many more functionalities.

Screenshots

Home

This is how the landing page of our website looks like. The idea behind keeping a white background and not having a fancy front end was to make the website look clean and easy to use. The website has been so designed as to facilitate easy reading and navigation between pages. It is not an ecommerce website and hence we wanted to keep the front end really simple.

The Home page has various other tabs like About, Gallery, Social, Research and Contact Us.
About

This page had some more information on our website and the purpose of it. Additionally it educated users more about Internet of Things. We incorporated “Google Translate” that gives a user to be able to switch to any other language he/she might be interested in reading the articles on our website since we understand that our website could be of interest to people across the globe.

Gallery

We provided videos on IOT that equips a user to get in depth knowledge on the different devices that are connected to the internet and tutorials that informs the user on how they interact with each other. This page also has pictures from Instagram showing the latest devices launched for IOT.

Social

This page is especially designed to let users interact with each other and give comments on any particular device. We had integrated Facebook and Twitter for this purpose. Facebook gives a platform to post comments as well as “Like” and “Share” features were utilized to give the freedom to the user to be able express their feelings right from our webpage. We understand that social media is an important feature that the audience looks at and so we also have the “Twitter Feeds” displayed live on the left side of our webpage. The news feed is supplied by “Feedzilla” that posts live news on IOT and keeps our users updated. If a user wants to read more on any particular news he/she can directly click on the link and the user gets the complete news on the subject.
Research

This is one of the novelties that our website offers. It is especially designed for researchers who wants to gain more on any specific or new device. This page reveals the various patents associated with a device and the company or the individual who holds it.

Analytics

Tableau was used for designing the analytics on our webpage. Through this any user should be able to view the locations on a world map that has tweets being posted on Internet of Things. We pull in live Twitter feeds and analyze them using Tableau and also Hacker web. Hacker web is a web community for hackers where people posts on their interest of hacking devices. We tried to incorporate this and find out what are the IOT devices that people have been talking about hacking and in which part of the world.
Contact Us

This page has the contact details of all the people who could be reached out to in case a user needs help on our website.
Business Perspective

Revenue

Our current revenue model consists of two parts:
1- Advertisement (Google AdSense)
2- Amazon Affiliate.

While advertisement may not be most ideal way to generate revenue for startup websites, our website is an information based website, and we did not want to divert our focus and create another category of focus.

Revenue Projection

At this point, it is too early to determine the exact revenue, as there are a couple of factors that take into play:
1- Traffic
2- Page Rank
3- CTR (Click Through Rate)
4- Pages viewed
5- Duration of page view

For that reason we have signed up with Google Analytics, and this will monitor all these features.

Future Plans

Three Year Plan:

Year 1: As previously mentioned, we are targeting advertisement and affiliates programs as the major source of revenue. While at the moment, the volume of revenue is uncertain, Internet of Things is a growing business and many companies are picking up on this area of technology. As previously mentioned, we are using Google Analytics to monitor website traffic. After monitoring our current traffic, we hope to be able to project future website traffic in order to move forward with feature enhancements to our website.

Year 2: Depending on the traffic outcome, we are planning on implementing an additional source of revenue generation, the Groupon Model. By creating a membership account with us, users would be able to receive discounts on technology related items from electronic stores in their area. Presently our website is integrated with Facebook login, so moving forward will create a database for user information. This would not only facilitate membership, but would also help us carry out useful analytics using that data and customize our website based on each user.
Year 3: Once website strengthens its hold in Internet of Things domain we may have to implement other marketing strategies like: customer segmentation and customer targeting. In addition, we may need to add, remove, and enhance various features of our website.

Roles and Contributions

Abishek Pidwa
- Web Dev (JSP)
- EC2
- Instagram
- Tumblr
- YouTube

Prashant Bhushan
- Google Patents
- Feedzilla
- Amazon
- Google Custom Search
- Website Design

Alla Freer
- Google Translate
- Web Content
- Slides
- HackerWeb
- Business Case

Anirudh Khandelwal
- Twitter
- Analytics
- Facebook
- Shodan
- Java Controller
References

IOTrendz Website:  http://ec2-54-186-209-108.us-west-2.compute.amazonaws.com:8087/WebMiningProject/IOTServletController?flag=/jsp/IOTAboutUs.jsp