Materials Chapter Creation and Android Feedback Application

Final Year Project Report
Submitted by

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Under the Guidance of
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Bonafide Certificate

This is to certify that the Final year Project titled "**Materials Chapter Creation and Android Feedback application**" submitted by Pruthvi Sai Krishna Gowd. Kasani (COE15B019) to the Indian Institute of Information Technology Design and Manufacturing, Kancheepuram for the award of "**Bachelor of Technology in Computer Engineering**", is a bonafide record of the project work done by him under my supervision. The contents of the project, in full or in parts, have not been submitted to any other Institute or University for the award of any degree or diploma.

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Contents

Abstract

As the world and its economies become increasingly globalized, it is necessary to think about open innovation in a global context. The cream of the research work can be tasted in none other than the corridors of education. Recent research and innovation policies put a strong emphasis on interaction between universities and industry. Closer interaction should lead to more relevant research projects, quicker absorption of scientific knowledge in the private sector and better utilization of scientific knowledge. Many forums in the fields of Nanotechnology, Material sciences, Physics, Optics, etc do exist with an objective to connect and share knowledge. Still many industries did not penetrate much as Projects that have been established only with previous contact or strategic need are seen as less positive and with less expectation of continuance. Collaborative research projects formed based on both previous contact and experience need are more positive overall as that can open up new avenues for the growing business.

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Android is a software platform and operating system for mobile devices based on the Linux operating system and developed by Google. A mobile app (or) mobile application is a computer program designed to run on a mobile device such as a phone/tablet or watch. Delopying these applications at a right place finds its importance. Feedback is necessary for any activity nowadays. Recording or Storing the feedback through an application would solve the manual pen and paper feedback system.

In this project(s), we would like to come up with an online forum for the first project, Chapter Creation and a native Android feedback application for taking the feedbacks from user(s) in a much easier way, eliminating the paper process. Chapter Creation could solve a lot of problems to any organisation by bringing the domain experts into picture from various premier institutes across the country. And, for feedback application, could be presented in a much more useful way that could be used for analysis.

Chapter 1

Introduction

1.1 Chapter Creation

Reasonable number of experts, scientists and researchers are available across India. Strengthening interactions between industry and research institutions like universities, colleges and research institutes have over the last years increasingly been seen as a strategic instrument for regional and national innovation, economic growth and competitiveness.

Closer interaction should lead to more relevant research projects, quicker absorption of scientific knowledge in the private sector and better utilization of scientific knowledge. The cream of the research work can be tasted in none other than the corridors of education. Recent research have been more industry driven and it could solve up some great challenges. Organisation(s) could comeup with a great projects that could be solved in some innovative ways with the help of young talent.

1.2 Feedback application

The era of mobile technology opens the windows to the android apps. Mobile apps have become the part of our daily routine. New apps have been emerging all over, based on the user requirements. There are three types of Mobile applications, namely, Native, Mobile Web and Hybrid Applications.

A mobile app or mobile application is a computer program designed to run on a mobile device such as a phone/tablet or watch. Mobile applications often stand in contrast to desktop applications which run on desktop computers, and with web applications which run in mobile web browsers rather than directly on the mobile device.

1.2.1 Native apps

They are built for a specific operating system. A native application developed for Android doesn't work on iOS and vice-versa. Software/Languages used for developing native apps are Objective-C (or) Swift for iOS, Java (or) Kotlin for Android and .NET for the Windows operating system.

1.2.2 Mobile web apps

Applications built to deliver pages on web browsers running on mobile devices. Software /Languages used for developing the Web apps are HTML, CSS, Javascript, JQuery.

1.2.3 Hybrid apps

A mixture of both Native and Mobile web apps. They have cross-platform compatibility and also can access the system hardware. Software/Languages used for developing Hybrid apps are HTML, CSS, Javascript alongside frameworks like Cordova/PhoneGap etc.

Parameters	Native	Hybrid	Web apps
Distribution	Apple App Store, Google Play Store		Web
Development span	More	Medium	Less
Performance	Good	Average	Good in PC's average on browsers
Skillset	Medium	More	Less
Suitable for	Apps where performance, graphics are important	Apps which need full device access	Apps where push notifications, devices access are not important

Table 1.1: Table showing the comparison of different mobile applications.

1.3 Motivation

Taking stock of existing collaborative initiatives to drive open innovations and identify synergies and opportunities for enhanced cooperation with materials scientist and metallurgist across the nation to reinvent technology in accordance to industry needs.

To decrease the manual procedure and bring in some automation in the feedback management process. Making it as simple as possbile so that users can use it very easily.

1.4 Problem Statement

To come up with a forum that will bring together over 50 participants that include delegations from various Institutes with Scientific background from various grades that will bring their unique perspectives to the conversation. The forum will also include participation of Industry experts from our group companies

To develop an application that takes the user feedbacks in an easier and user-friendly way. Reduce the feedback process to time to a large extent eliminating the all the problems expected in the manual feedback process.

Chapter 2

Literature Review

Closer interaction should lead to more relevant research projects, quicker absorption of scientific knowledge in the private sector and better utilization of scientific knowledge. Many forums in the fields of Nanotechnology, Material sciences, Physics, Optics, etc do exist with an objective to connect and share knowledge. Recent research and innovation policies put a strong emphasis on interaction between universities and industry.

Still many industries did not penetrate much as Projects that have been established only with previous contact or strategic need are seen as less positive and with less expectation of continuance. Strengthening interactions between industry and research institutions like universities, colleges and research institutes have over the last years increasingly been seen as a strategic instrument for regional and national innovation, economic growth and competitiveness. Collaborative research projects formed based on both previous contact and experience need are more positive overall as that can open up new avenues for the growing business.

The plenary at this year's materials and metallurgy forum will cover three key questions that companies typically face as they address the efficiency challenge:

- Identifying the right expert to engage and work with.
- Resources and its capabilities aren't known widely to who seeks such solution providers.
- Recent trends in the field of research is not known causing duplication of efforts and resource utilization.

In the recent years, the advances in mobile technology have brought an exorbitant change in daily lifestyle of individuals. Smartphones/mobile devices are rampant in all aspects of human life. This has led to an extreme demand for developing software that runs on mobile devices. The developers have to keep up with this high demand and deliver high-quality app on time and within budget. For this, estimation of development and testing of apps play a pivotal role. In this paper, a Systematic Literature Review (SLR) is conducted to highlight development and testing estimation process for software/application. The goal of the present literature survey is to identify and compare existing test estimation techniques for traditional software (desktop/laptop) and for mobile software/application. The characteristics that make mobile software/application different from traditional software are identified in this literature survey. Further, the trend for developing the software is towards agile, thus this study also presents and compares estimation techniques used in agile software development for mobile applications. The analysis of literature review suggests filling a research gap to present formal models for estimating mobile application considering specific characteristics of mobile software.

Mobile phones and tablets have become the most widely used computing devices, with a large predominance of the Android platform. As a natural evolution, the development of Android applications has surged and has become a major field of study, with research efforts ranging from energy efficiency, to code smells, performance, maintainability, security, etc. These kind of challenges ask for dedicated solutions, tools, and datasets.

Early mobile application solutions required enterprises to choose between cradle-based synchronization through a wire line network or a pure online wireless solution (PENTA group, 2010). However, Mobile applications are a rapidly rising segments of the international mobile market, which consist the software runs on a mobile device and performs certain tasks for the clients. Because of the various functions including user interface for basic telephone and messaging service as well as advanced services, mobile Apps are widely used by customs. Also, mobile Apps are a large and continuously growing market and served by an increasing number of mobile App developers, publishers and providers (the Mobile Marketing Association group, 2008). New research suggests that the global market for mobile applications will explode over next two years. Research has been done for Getjar, the world's second biggest Apps store, said that the market will grow to 17.5bn US dollar in the next two years and downloads would rise from 7bn last year to 50bn by 2012 – a 92 percent increase (BBC News, 2010).

Android has been creating waves in the coming times with high technical interface in the mobile world. This latest innovation helps the publishers to deliver applications directly to the end user and easy downloads of applications can be achieved.

The mobile devices being utilitarian, user-friendly, accessible has made it the most popular and indispensable expedient for human essentials from the past few years. Mobile software developers' are driven

to release software on time and within budget. Software estimation plays a pivotal role in providing the most accurate sizing figure for building confidence in developers and stakeholders relationship. Many approaches used for estimation of traditional software are adapted for mobile application development and testing.

As mobile platforms persist to progress in performance, users are expecting their mobile devices to provide functionality similar to their desktop computer applications. However, the development of mobile applications (mobile apps) is still considered to be complex and various methodologies adopted towards the development of such technologies is inadequate.

Mobile application development is different from traditional software development. To develop a great mobile application, it is crucial to understand the key features that define great mobile apps and if practically applied, make them useful and valuable. The wide variety of tools and platforms of mobile devices causes one to examine the unique characteristic of mobile application development and evaluate the process of which new features and methods need to be addressed while designing, coding, testing, deploying and maintaining mobile applications. However, there is still lack of research initiatives and insufficient understanding of different types, categories and characteristics of mobile applications. This exposes the mobile device to prospective attacks which needs to be addressed promptly requiring newer research initiatives and has motivated to undertake the present study.

Chapter 3

Proposed system

Looking across the current system, where should reform and investment be prioritized? The forum will have five plenary to explore these questions:

3.1 Custom Clusters

Plenary 1 will look at how solutions to the current challenges from the companies can actually be obtained from and deliver on that consistently. Filtering out materials and metallurgy specific challenges and post them in this closed forum to get high caliber solutions and on the other hand protecting the confidentiality on either end.

3.2 Push to Pull

Plenary 2 will address how we can get to know the research work carried out by the experts in the forum for a different application be useful to us and mapping the potential possibilities of horizontally deploying them. Also Expert who has developed the technology posts it in the discussion forum and we get to hear various applications for the same from people in the forum.

3.3 Voice of Technology

Plenary 3 will examine how to bridge the awareness gaps between recent innovations / researches and our knowledge on the same .Posting the recent technology that we come across and debating on the various aspects of it.

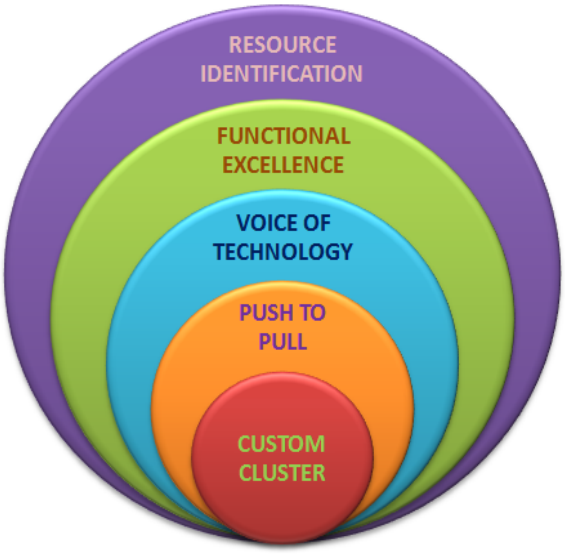

Figure 3.1: System having the five models inside

3.4 Functional excellence

Plenary 4 will provide knowledge transfer from experts on varied topics for industry experts who are busy in regular schedules (from mangers to our shop floor employees).

3.5 Resource Identification

Plenary 5 will help our group companies to identify the right candidate for various roles. Also lab and testing facility identification becomes handy.

This year's forum will bring together over 50 participants that include delegations from various Institutes with Scientific background from various grades that will bring their unique perspectives to the conversation. The forum will also include participation of Industry experts from our group companies.

3.6 Forum Format

The forum will be highly interactive and include the five plenary noted above as well as few parallel sessions on Q &A, where participants will be able to deep-dive into discussion topics. The registered participant in the forum will be able to see all challenges posted and in turn submit ideas for challenges in a much protected way where others cannot view. Other plenary will be open for others to view comment and discuss. The program will review current evidence in the field of Material sciences and assess

gaps in knowledge, brainstorm new approaches and opportunities for capacity building in accordance to industry needs, and debate controversial issues with respect to recent technology side effects.

We will start to focus on material sciences and expand to other areas based on the learning we take from here.

Feedback application thats's proposed in very simple and easy for the user point of view. The following are some changes to make to develop the application.

3.7 Seeting up the Environment

3.7.1 Java Development Kit 5 (or) 6

Download the JDK5 or 6 and install it. Later, set the path, where you have javac in environment variables.

3.7.2 Android SDK

You can download the SDK based on the requirement but Android 5.0.0 and later is preferred as most of the smartphones run on Lollipop android version

3.7.3 Setup Eclipse IDE

Download and install the latest version of of Eclipse

3.7.4 Android Virtual Device/ any android smartphone

After developing an application, it needs a target device which it is to be tested on. There are emulators available with respect to the Android version and API-level. But, running applications on emulators is very time cosuming. So it advised to use a real time smartphone as a default target device to run the applications.

But, later Google later introduced an integrated development environment for Android development called Android Studio which offers an IDE, Android SDK, AVD and more.

3.8 Android Studio Features

- Extensive testing tools and frameworks
- A fast and feature-rich emulator
- A unified environment where you can develop for all Android devices
- Instant Run to push changes to your running app without building a new APK
- Code templates and GitHub integration to help you build common app features and import sample code

Chapter 4

Contribution

End product chosen for implementing is a web application. It's a full stack web application that involves both front-end and back-end as well. It should be able to allow the users to access the each and every aspect of the chapter discussed.[2] However, each of them has their own importance.

4.1 Tools (or) Libraries

- Apache server along with MySQL through the software XAMPP.
- Text editor like Brackets etc.,
- Libraries like Bootstrap, AJAX, JQuery, CSS.[1] [3] [4]
- Google fonts for font library and Font awesome for icons.

4.2 Working

Each of the plenary has it's own individual tab in the application. The explain to each of them goes as follows

4.2.1 Push to Pull

- It should address how one can get to know the research work carried out by the experts in the forum for a different application be useful to us and mapping the potential possibilities of horizontally deploying them
- In application, it allows the researchers to upload the related work in form a file of type .pdf

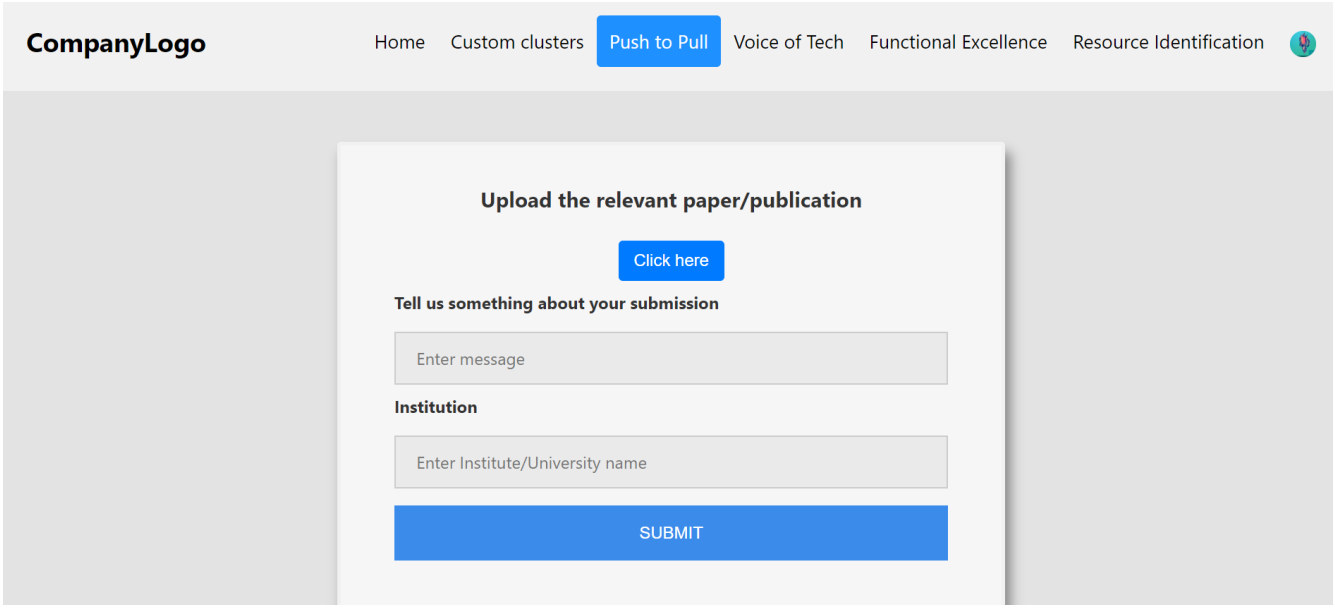

Figure 4.1: Push Pull to allow the users to upload their work

4.2.2 Voice of Technology

- Posting the recent technology that we come across and debating on the various aspects of it
- In application, it allows the users to discuss anything about technology in form of posts and comments feature

4.2.3 Resource Identification

- It helps group companies to identify the right candidate for various roles. Also, lab and testing facility identification becomes handy.
- In application, it would be seen as a search engine for the respective roles.

4.2.4 Profile management (additional)

It's an additional feature that allows users to customize their profile like change the profile image, edit about them etc., It also offers the feature called activity, where it shows the stats of the user like, no.of likes, no. of dislikes, no. of posts and comments etc., In application, it would typically look like,

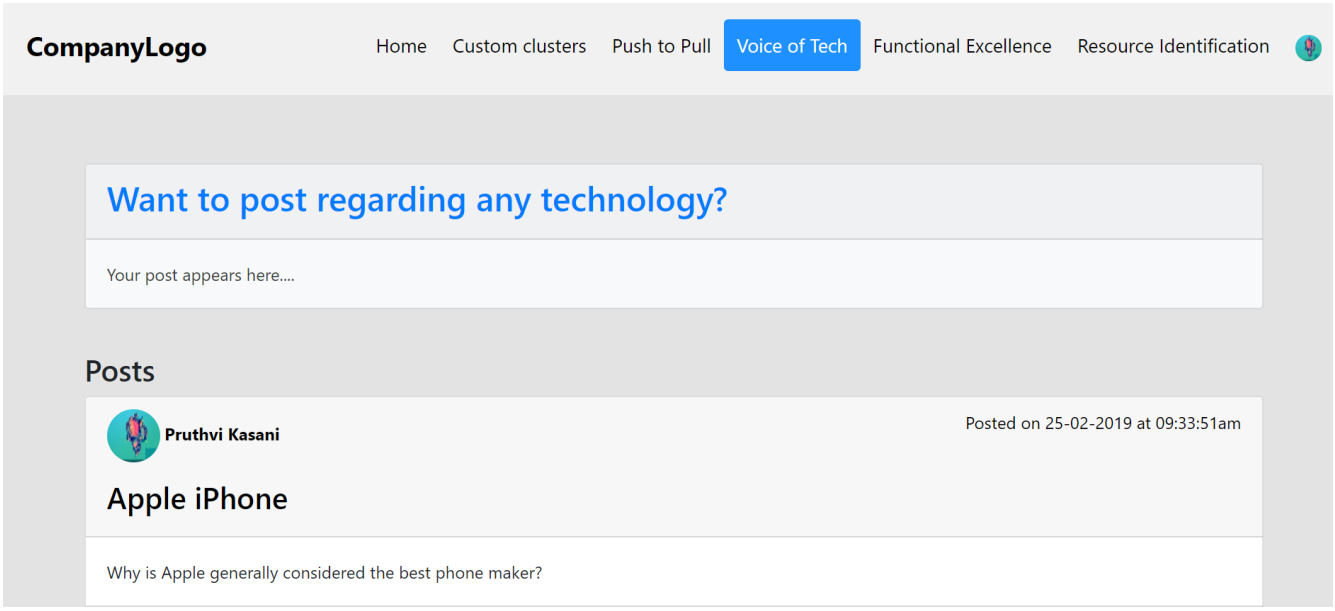

Figure 4.2: Voice to tech to discuss about Tech

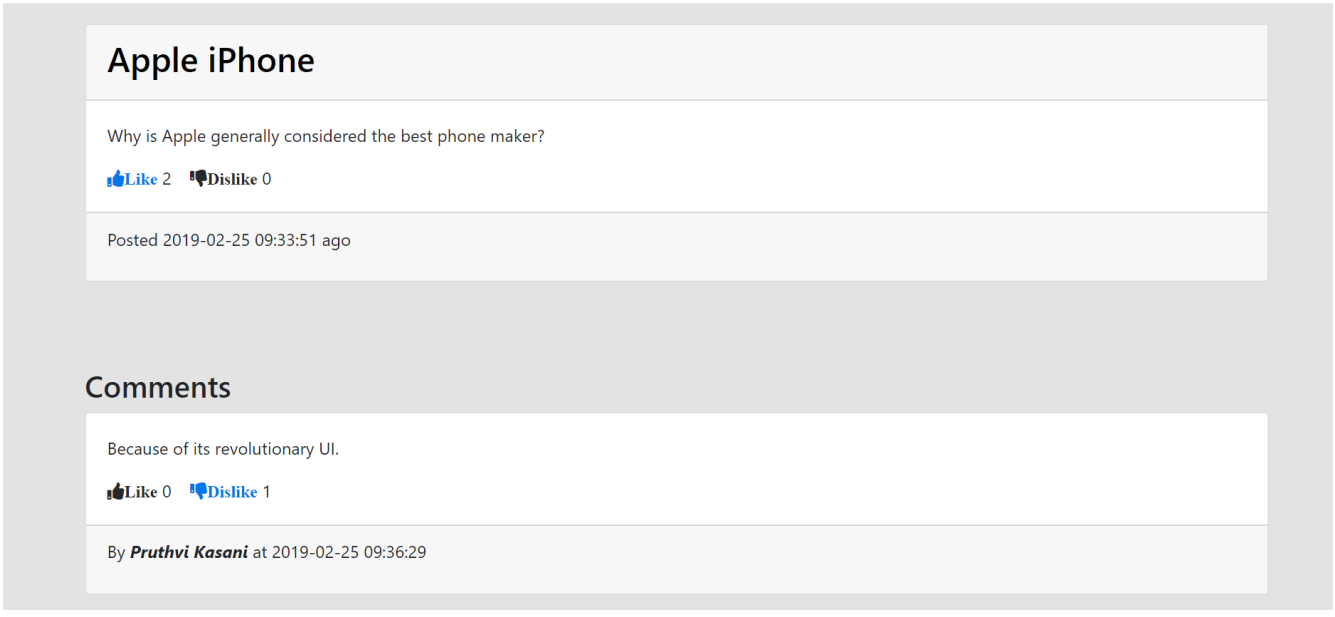

Figure 4.3: Comments section where you can comment

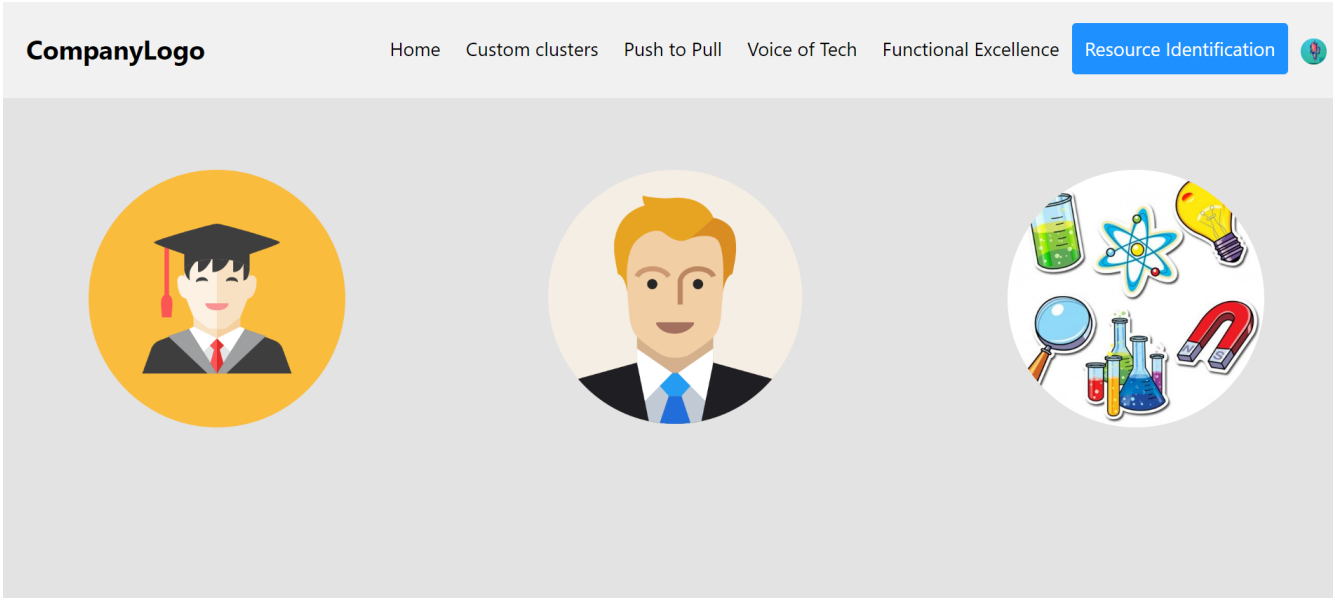

Figure 4.4: Resource identification to find the resources well

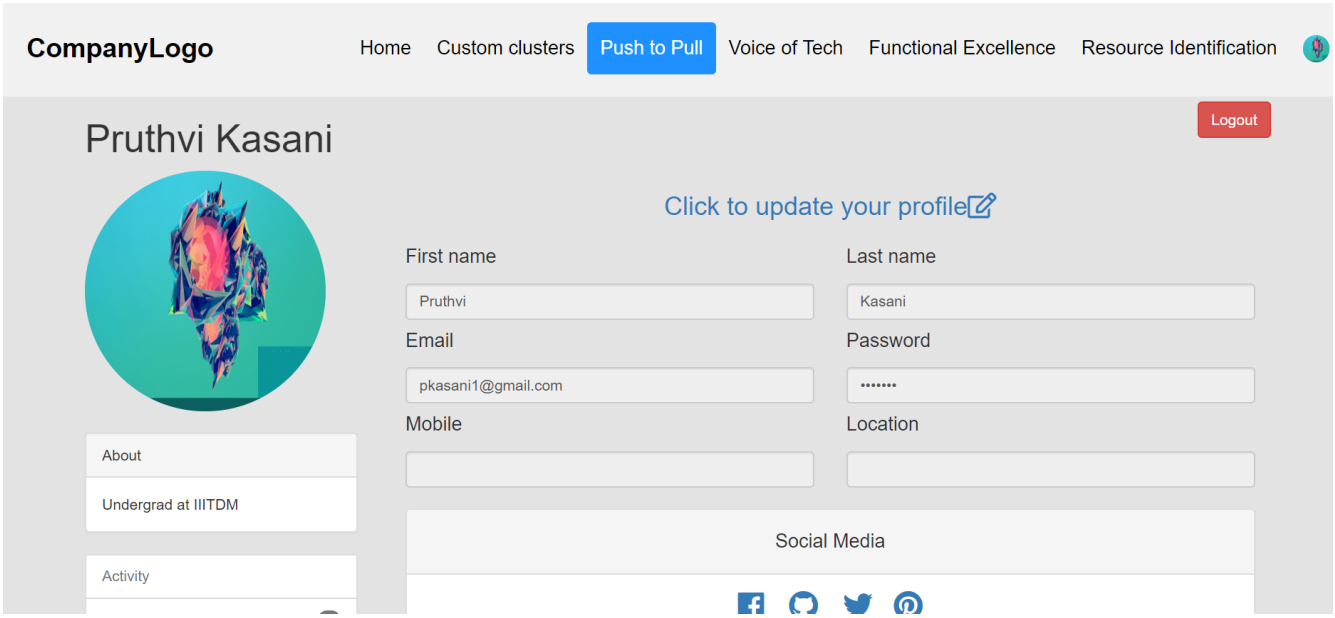

Figure 4.5: Profile updation page

A complete workflow of the project is explained below.

4.3 Planning

After the requirements are gathered from the client, a scope document is created in which the scope of the project is determined and documented. Many designs have been discussed and kept iterating, until the final design has evolved. The final design is wireframed after getting approval from all the team(s) involved.

4.4 Implementation

4.4.1 Client-side

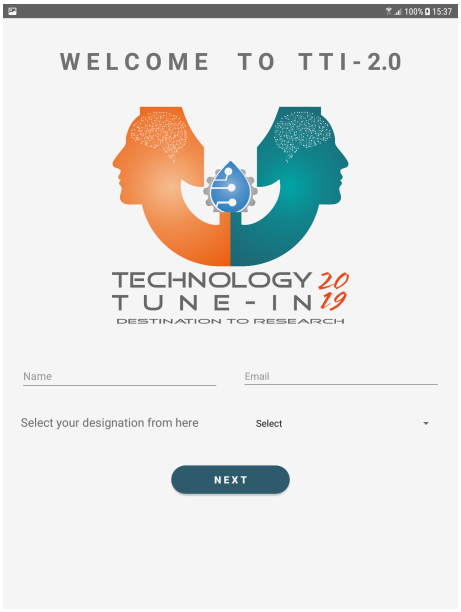

Figure 4.6: Registration Landing Page.

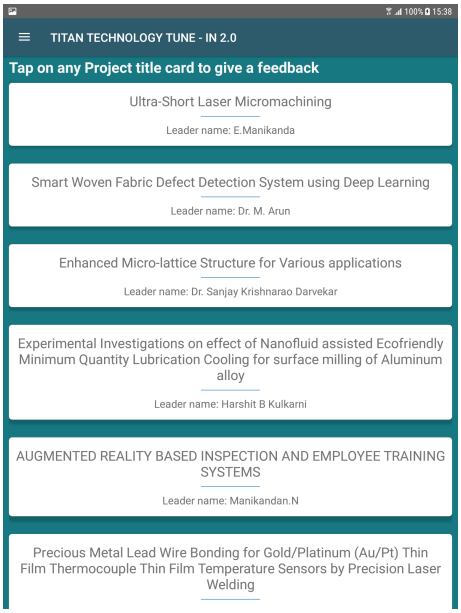

Figure 4.7: Items Listing Page.

Step by step process:

- The final wireframe is taken as input to produce the interface similar to it meeting the client's requirements.
- Embed the UI components like CardView, Navigation Drawer, TextView etc.
- Add event listeners to each of the components to meet the functional depedency that client's have stated before.
- Check for any component/event listensers that is being missed out.

```php
<?php

$HostName = "localhost";

//Define your database username here.
$HostUser = "*********";

//Define your database password here.
$HostPass = "********";

//Define your database name here.
$DatabaseName = "feedback_tti";

 $con = mysqli_connect($HostName,$HostUser,$HostPass,$DatabaseName);

 $name = $_POST['name'];
 $email = $_POST['email'];
$rating = $_POST['rating'];
 $department = $_POST['department'];
$feedback = $_POST['feedback'];


 $Sql_Query = "insert into stall1 (name,email,rating,department,feedback) values
 ('$name','$email','$rating','$department','$feedback')";

if(mysqli_query($con,$Sql_Query)){

 echo 'Data Submit Successfully';

 }
else{

 echo 'Try Again';

 }
```

Figure 4.8: Connection to the back-end

- Get all the required values to the correct variables that is to be send to the server side.
- After everything is done, we hit on the application server, requesting to access it.

4.4.2 Server-side

Step by step process:

- ER model is drawn to relate how entities relate to each other in the database.
- Database is created
- Tables are created after evaluating the first 3 Normal Forms
- Check if the values are inserting/modifying the in their respective positions
- Report appropriate error codes if any request out performs.

4.4.3 Integration

This is one of the crucial part(s) of the development process. Integrate the front-end (Client-side) to the backend (Server-side) using a script that's supported. Make sure that database connectivity and error codes receive properly.

4.5 Testing

- The build (APK) generated is given to the testing team for working on any bugs or reports.
- A spreadsheet is shared to both the ends i.e, testing team and the developers team.
- Developer team closes the test cases put forth by the testing team, once if they are done.
- This process keeps on iterating util the final build for release is obtained.

4.6 Deployment and maintenance

- Once if it's approved from the team, the app is all set for release with a specified version number.
- Production server is configured similar to the test server.
- A signed APK is generated with a key store password later.
- Google crash analytics is embedded into the app to view any crash reports.
- APK is uploaded into the Google Play Console to publish it on the Google Play Store.
- App gets published on the Play Store as the app with the specified version number.
- Later part of the application development only involves,
  - Checking the logs for any app crashes and rectifying them.
  - The updated version of the app is uploaded into Play Store.
  - Send push notifications to the users who are using the app.
  - Constantly, keep in touch the app users by replying their reviews etc.

Chapter 5

Conclusion

In this report, we have partially defined the working of the application. It exactly directs towards reaching the goal of the problem statement. There's a lot of brain storming sessions involved before coming with the application. The design should be very simple and easy such that the user could use all the features of the portal and be active. This portal mainly addresses to strengthen the interactions between industry and research institutions like IITs,NITs and other premier institutions. This process could help both the sides like, the people from research institutions get to know about the organisations where as organisations could solve the problems using some young talent across the nation.

In this report, we've tried to solve the manual feedback system problems with an simple application that runs on Android tablets. By this process, we can eliminate the huge amount of paper work by bringing the technology into its place. It can also bring down the huge amount of effort thats required to feed in all the values into visual form. Feedback given can be stored in suitable format that could be used for analysis.

Chapter 6

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