Schlumberger

Coding Hackathon

Final Report

Overview

The event was a 36-hours coding hackathon with a team of maximum 4 members per contingent. The problem statement was released at the start of the event, and the team members had to develop an application or API (no specific requirements were indicated) concerning the problem statement. The team had to submit the codebase (in the form of GitHub repositories) and the installation files through email and Google form at the end of 36 hours.

Presentations were scheduled for each team to judge the submissions by Schlumberger representatives. The presentation was restricted to 7.5 minutes with 2.5 minutes for interaction and questions by the judges, though the actual time was flexible. The presentations were closed-door, so there was no interaction among other contingent teams.

Problem Statement - Roads' Leasing and Maintenance

1. When Government leases roads to contractors, it has no way of checking the progress of the project and has to rely on manual surveys and whatnot.

2. Further, maintenance of the leased road is a huge pain. The government must perform regular surveys to check whether the road is in good condition.

3. Can you design a system where this process can be simplified or gamified by which we can crowdsource this kind of data?

4. Make sure that a user who provides data can track the reported finding until it is resolved.

5. The system should be portable device friendly.

Team

Since development requires front-end, back-end, and UI design, the team comprised of four undergraduate members from the Coding Club IITG. The diverse set of skills required for the event was fulfilled accurately by the team members:

- One member for front-end and UI design (Bootstrap, AngularJS)
- One member proficient in web-development technologies (Django, NodeJS)
- Two members proficient in app-development technologies (Android Studio)

Interpretation

1. Motivating realities
   Nowadays almost everyone has a mobile phone and even the most basic smartphones often come embedded with a variety of features. These features, such as camera and geolocation tagging, in combination with a large user base, offer huge potential in the realization of crowdsourcing applications. The crowdsourcing aspect is especially of interest in situations where users' everyday actions can generate data usable in more complex scenarios, such as defined by the problem statement.

2. Connection with the problem statement
   The construction and maintenance of public properties such as roads can be checked by

crowdsourcing the feedback data to the general public so that they can certify the progress or the status of the properties in contrast to that by solely the contractors.

3. Implementation

An Android-based application was developed by the team: RoadSeva, which exploits these aspects and aims to automate the process of surveying the construction and maintenance of the public properties. The app uses an algorithmic paradigm to collect and group these surveys according to their precision and complaint locations. Being an Android-based application, it could be easily installed in smartphones and thus fulfilled the criteria of portability.

Detailed Features of the application - RoadSeva

- Userbase
  The application serves three kinds of users: common citizens, contractors, and government officials. Two Android-based applications were developed to cater the needs of citizens/contractors as well as administrative purposes for the officials effectively.

- Motivation to use the application
  The app uses a virtual reward-based system to encourage the public to use the app promoting user engagement.

- Construction
  The general public could register with the app using a secure login and report problems with the construction sites by uploading videos or photographs. Users could also view the current construction projects in the nearby region.

- Surveys
  They could also report the progress of the construction and estimate their knowledge of the percentage of the project completion. Geolocation tagging was used to verify

whether the data reported by the users have been gathered around the concerned location.

- Maintenance

  For any maintenance issues reported by the public, the government officials respond by assigning a new project and allocating the contractor from the list of active contractors to resolve the issue.

- Algorithmic classification

  The complaints were segregated by the regions in which they occur and grouped according to the locality of the complaints based on some central coordinates to represent the statistics in an efficient manner.

- Government Officiality

  Government users could also view the details of the current construction projects which included the progress reported by the contractor and the public.

- Contractors

  Contractors were notified whenever a new project is floated by the government and can report bidding for the projects. They can also send statistics of the projects assigned to them including the status of the complaint requests.

Presentation

The team made a PowerPoint presentation to showcase the aim and features of the application. The presentation was conducted in a hall with a projector and microphone facilities to showcase the project; the PowerPoint presentation was presented on the projector while the application was presented on smartphones and handed over to the judges (we could have used emulator to showcase the project on the projector which could have been better, but due to technical glitches weren't able to).

The judges asked some logical questions and queries and were satisfied with the project. Overall the response of the judges was great.

Limitations

Being a low-prep event, there were no difficulties faced as such. We could have been better prepared for the presentation: planning the sequence of features to showcase and avoid any technical glitches during the presentation.

Conduction of the event from the host-IIT could have been better. There were no representatives at the venue of the event during the period of 36 hours. Submission of the code could have been better instead of using Google forms and e-mail which have data upload limit problems.

Interactions among the judges and students were negligible at the time of the problem statement release. This is crucial to understand what exactly the judges desire, as sometimes when a problem statement is open, understanding the view of the judges is important. At the end of the presentation, the judges informed that they desired something more innovative since all contingent teams had more-or-less worked on the same core idea.

Positive Points

Collaborating with a company like Schlumberger was a really good idea for conducting the event, as it provided corporate insights into what kind of problems are being faced by today's world. It also provided experienced judging by the company representatives as they provided us with really amazing suggestions about how the product can be evolved and technologies that could be incorporated in the application.

There were not many restrictions for the event which was a great decision. Participants were allowed to code from anywhere (even the hostels and not compulsorily the venue); as the period of 36-hours is really tiresome and energy-draining.

The presentation schedule was released before-hand and updates were given at the end of each team's presentation, to give ample amount of time to prepare for it. Overall, the conduction of the presentations was smooth.

Conclusion

Each contingent team had worked on the same core idea for the application, so the presentation of the application was crucial in the scoring. Answering the questions put forward by the judges satisfied them and had an impact on the liking of the product.

IIT Guwahati contingent team scored the highest marks in the event, normalized to 100, and got Gold Medal for the same.