Project Abstract and Design

Team 22

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Abstract

Trust is a major issue when it comes to purchasing a used good from an unknown, sometimes the product in advertisement is entirely different from the original one. Our web application verifies the legitimacy and extracts various features of the product from its uploaded picture using computer vision techniques, so that users can have a seamless experience in carrying out their desired actions. The application also handles lost/found based issues i.e posts of found objects are efficiently matched to the posts of lost objects by using computer vision techniques, and the users are notified once the quality match is found, thus saving them from going through the feed every minute. In order to speed up the process of finding the product our application uses reward system for the finders which they can later redeem, and the selection of the set of finders (one's who are interested) is carried out by using the current location of finders and the last found location of the lost object, and those finders are then notified. Issues (if raised) regarding the ownership of the lost objects is supposed to be solved by the finder (using extensive details provided in our application) and related parties.

Problem Statement:

To build an efficient Lost-found-Sell web application. The application allows one to buy a listed product, sell a product, list a product that was recently lost and earn rewards for finding a lost product.

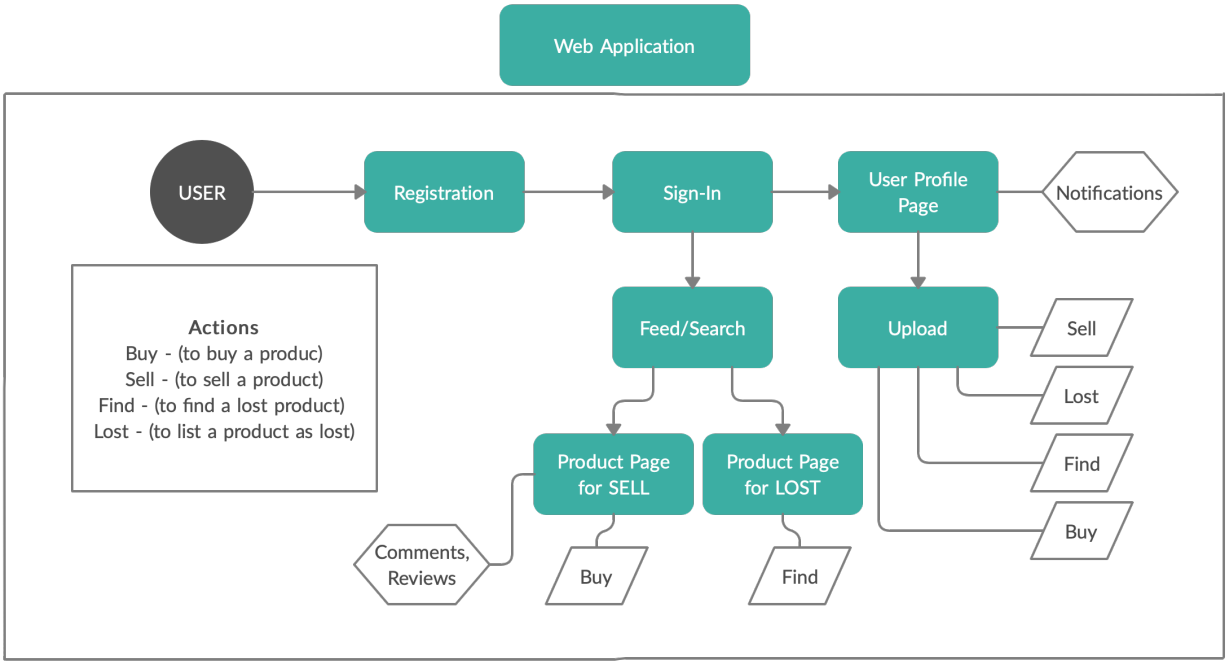
Solution Overview:

Our application allows new users to register and upon registering users can carry-out their desired actions. As listed below,

A user can browse through his FEED or use SEARCH feature to look for a particular product to BUY,

A user can upload his/her product to SELL through UPLOAD feature,
A user can upload his/her product to list as LOST through UPLOAD feature,
A user can search for a LOST product near his/her area and earn REWARDS upon finding one, and consequently the owner is notified.
As mentioned in the abstract we find innovative solutions using Computer Vision and NLP to seamlessly and efficiently provide best services to our users.

Application Design



The above diagram shows the working of our web application. A step by step explanation is given below,

* First the user registers using appropriate credentials via Registration page,
* Upon registering, the user can login into the application through sign-in page,
* User is then taken to the FEED page where there are multiple products listed either for SELL or are LOST, there is also a SEARCH feature available,
* NLP is used in search feature to efficiently find the valid matching tags to give correct search results, filters are available for FEED to get desired products' feed. A user can also search using images i.e image search is available too,

* User can choose to go to his/her PROFILE page where they can view various notifications (like Messages), their REWARDS and update any info-section (like current location) if they wish to. They are also provided with upload option,
* Upon clicking the upload button user is taken to upload page where the user can either list their product for SELL or list it as LOST by giving necessary details regarding the product or upload image of the FOUND product or give information regarding the product they would like to BUY,
* Products listed for SELL and LOST are both immediately made visible in the FEEDs of other users and both types have their own respective product pages,
    * SELL products pages have necessary information regarding product and other information like Comments, Reviews and Ratings,
    * LOST products pages have information such as product details, 'last found location and time', owner of the product etc.
    * FOUND products pages gives necessary information regarding the found product so that valid owners can claim it from the one who posted the information.
    * BUY products pages lists the given users information regarding the product that he/she would like to buy and its different from search feature in the sense that users can have extra information to add regarding the type of product.
* In the UPLOAD page certain information sections are auto-filled upon uploading the product's image by using Computer Vision (where tags are generated and are later used in SEARCH feature),
* Users who find the LOST products are given reward points which can later be redeemed and owners are notified that their product has been found and the finders information is shared.

Technologies used:

Following are the technologies used in the development of the application

* FrontEnd - *HTML, CSS, JS, Bootstrap*

* Database - *PostgreSQL*
* BackEnd and Connecting Database with FrontEnd - *Flask*
* Product Deployment - *Azure Kubernetes Service (AKS), CI/CD Integration*

Work Distribution:

The work is equally divided among all the members of the team in an efficient manner so as to reduce interdependency as much as possible.
At least two team members are assigned to develop/build and test an assigned feature of the application, we found this technique to be more benefiting then

assigning the whole of FrontEnd to few team-mates and BackEnd to others etc as the latter would lead to synchronisation delay among groups.
The final integration of all features into one single web application (in flask) is to be done by all the members for the integration to happen seamlessly.

The following is the work distribution among team members,

* **FEED** and **SEARCH** - *Kshitij, Additya, Daksh, Ganesh*
* **User Profile** page, **Registration** and **Sign-In** page - *Harish, Trunapushpa*
* **UPLOAD** and **PRODUCT** page - *Trunapushpa, Daksh, Ganesh*
* **Deployment** - *Harish*

We hope to successfully complete the project exploiting the knowledge we gained from the lectures up until now, also by adhering to the above design and work distribution, thereby achieving our aim to build a novel, useful application for the world.