

Relative Image search

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Abstract : An efficient search mechanism would perform the search based on the input images. The users using the portal for purchasing the relevant spare parts for machinery or equipment often have trouble in remembering the exact part names, hence the search based on the user input results in incorrect parts being returned by search results. This requires huge results in terms of remembering all the part names or having individual person to search for parts for specific machinery. In order to make the search more efficient, the user will be allowed to upload the photo of the parts which he wants to purchase. The search engine uses the **OCR technique** to scan the individual features from the uploaded image and return all the relevant parts thus eliminating the issues faced by the traditional search. The search engine also returns other relevant parts as part of the "Related Search" based on the previous purchases made by the same user.

Key Words: OCR

1. INTRODUCTION

An efficient search leverages Digital Image Processing technique which extracts the key features from the uploaded image and reduce the noise which guarantees the same quality is achieved regardless of time and place. The image enhancement will bring out the details that were obscured or highlight key features from the image. Low and high pass filters (spatial filters) are used when the filtering is based on pixel values and gradients to smooth and reduce noise and details. High pass filters are used for edge enhancement and to sharpen an image. Low pass filters are used to smooth an image.

2. IMPLEMENTATION METHODOLOGY

In this method, User uses the portal to perform the search of the items using their device. (e.g.) Mobile, Tablet etc. The portal receives the user input and sends to the Office 365 which hosts the API. The search engine internally uses the OCR and Meta data services to extract the critical information from the search input and queries the database. The database in the backend will be the repository for the images and the features extracted from the images. The images in the database are stored in binary format and the relevant meta data information for these are stored in separate table. The backend will send the relevant results to the service layer that hosts the API which in turn will return the results to the portal. The results are sorted in the order of maximum % of meta data match

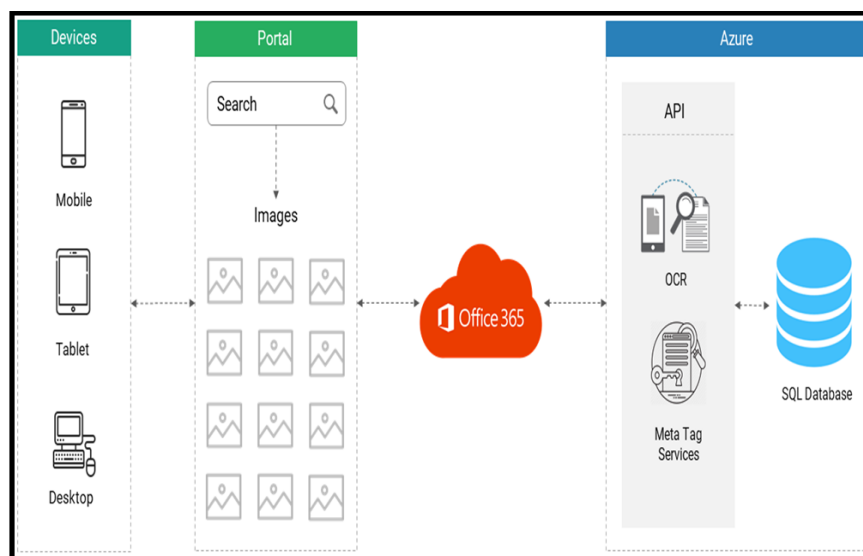


Fig -1: Implementation methodology

2.1 OPTICAL CHARACTER RECOGNITION

Before OCR can be used, the source material must be scanned using an optical scanner (and sometimes a specialized circuit board in the PC) to read in the page as a bitmap (a pattern of dots). The Software to recognize the images is also required. The character recognition software then processes these scans to differentiate between images and text and determine what letters are represented in the light and dark areas.

2.2 AZURE

Azure is a cloud computing platform that is owned, managed, and offered by Microsoft. It's the second-largest cloud computing platform in the cloud computing market right now. It is created for building, testing, deploying, and managing applications and services through a global network of Microsoft-managed data centers. Azure is Microsoft's Cloud Computing Platform, similar to AWS by Amazon or Google Cloud by Google.

3. SEQUENCE DIAGRAM

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagrams are sometimes called event diagrams or event scenarios. A sequence diagram shows, as parallel vertical lines (lifelines), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

3.1 LOGIN PAGE

While clicking the login button it will invoke the method 'checkUserCredential' with the email ID, password and Api URL. If user is valid, then API returns User ID then navigate to Landing Page.JSX. If the user is not valid, then the API returns 0 and then a notification is shown to user as "Invalid credentials".

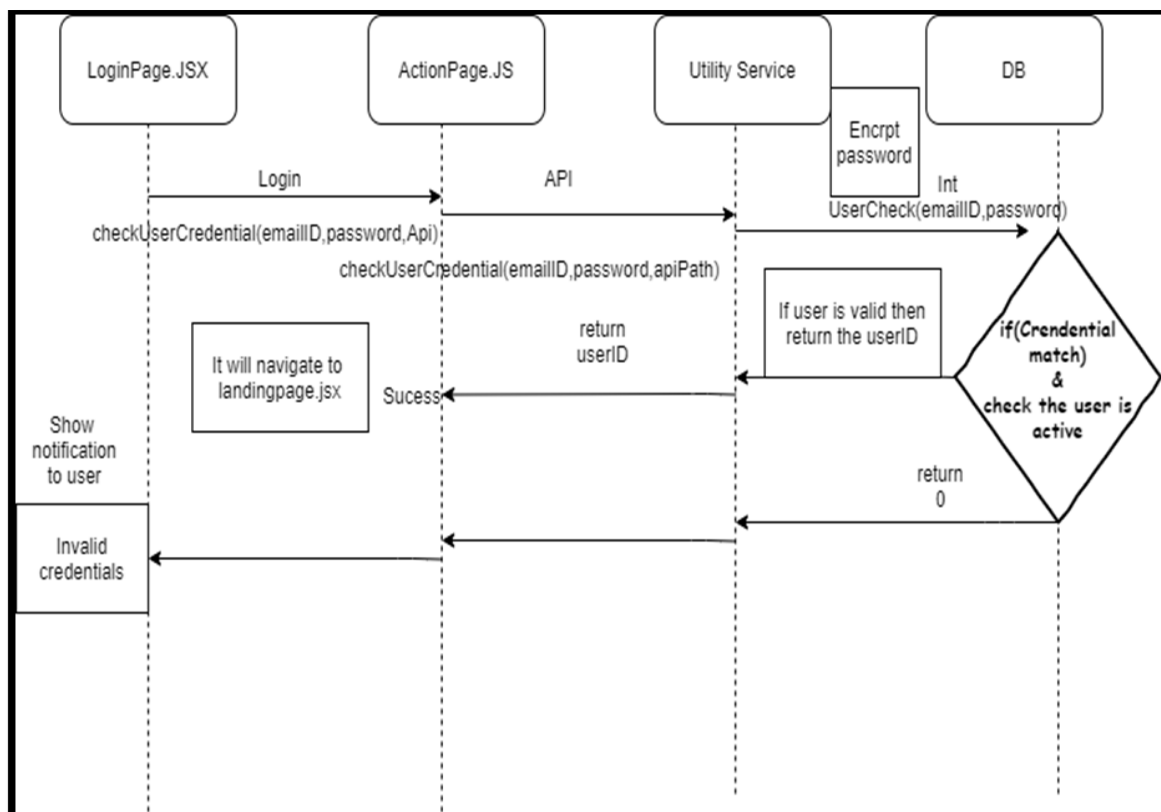


Fig -2: Login page

3.2 LANDING PAGE

The landing allows the users to perform text based and image based search. Text search is shown by default. In this user can enter the keywords, meta data information related to products and perform search. In case of Image search, user will upload similar images and perform the search. When a search is done, the 'searchContent' method will be invoked. A JSON response will be returned and type field will distinguish whether a text or image search is invoked. The results will be bound to the dynamic control available on the SearchResultPage.JSX. If no records are returned, then a notification "No record found" will be shown to the user.

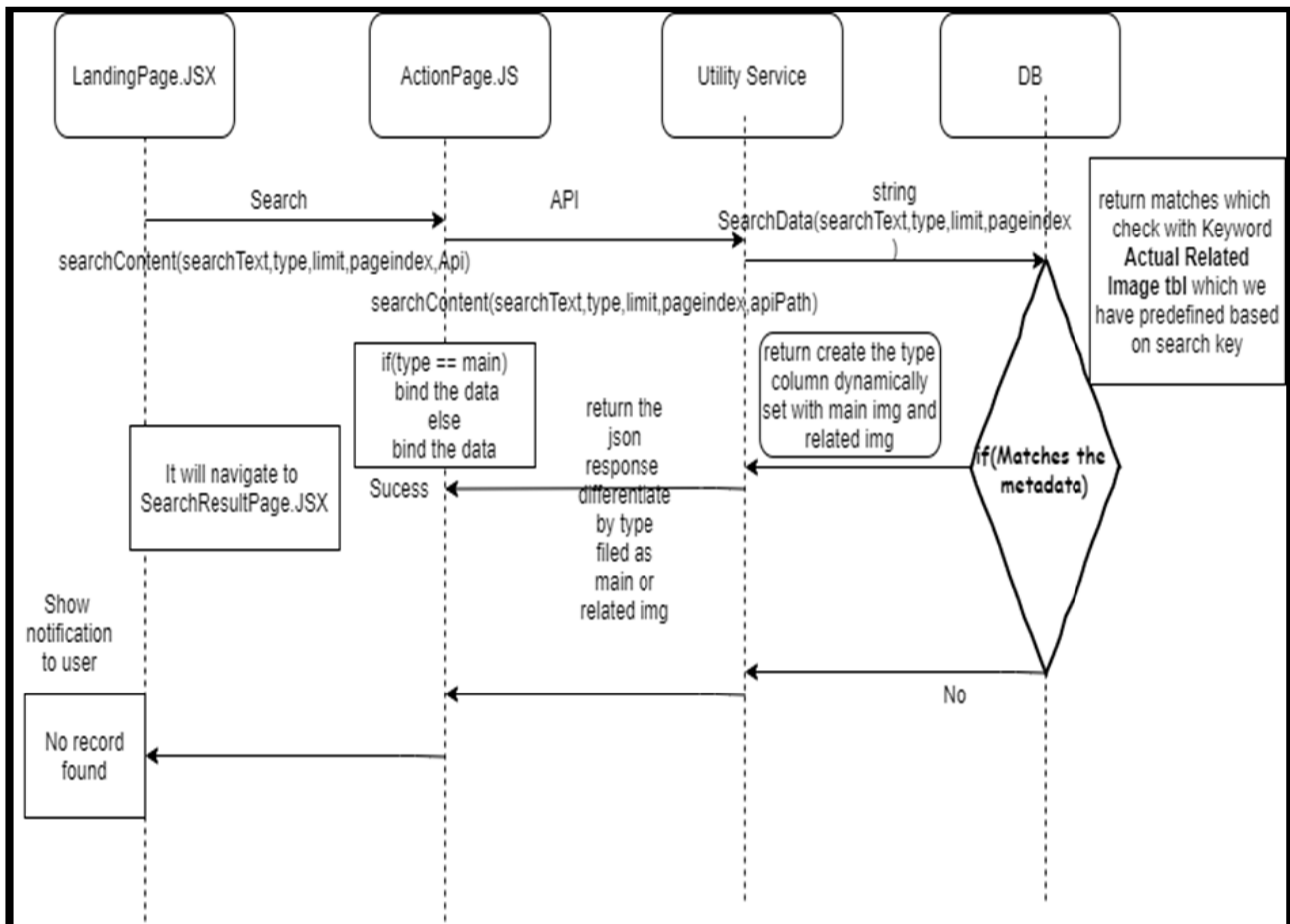


Fig -3: Landing Page

3.3 SEARCH RESULT PAGE

The search data returned post the search will be binded dynamically to the search results grid. For each of the result, a text box for entering the quantity and the button "Add to Cart" will be added. "Load More" button will be added to the end of the page allows the users to get more results. Only top 10 results will be returned during each call. And subsequent results can be loaded using the "Load more" button. On clicking the "Add to cart" button the addToCart method will be invoked.

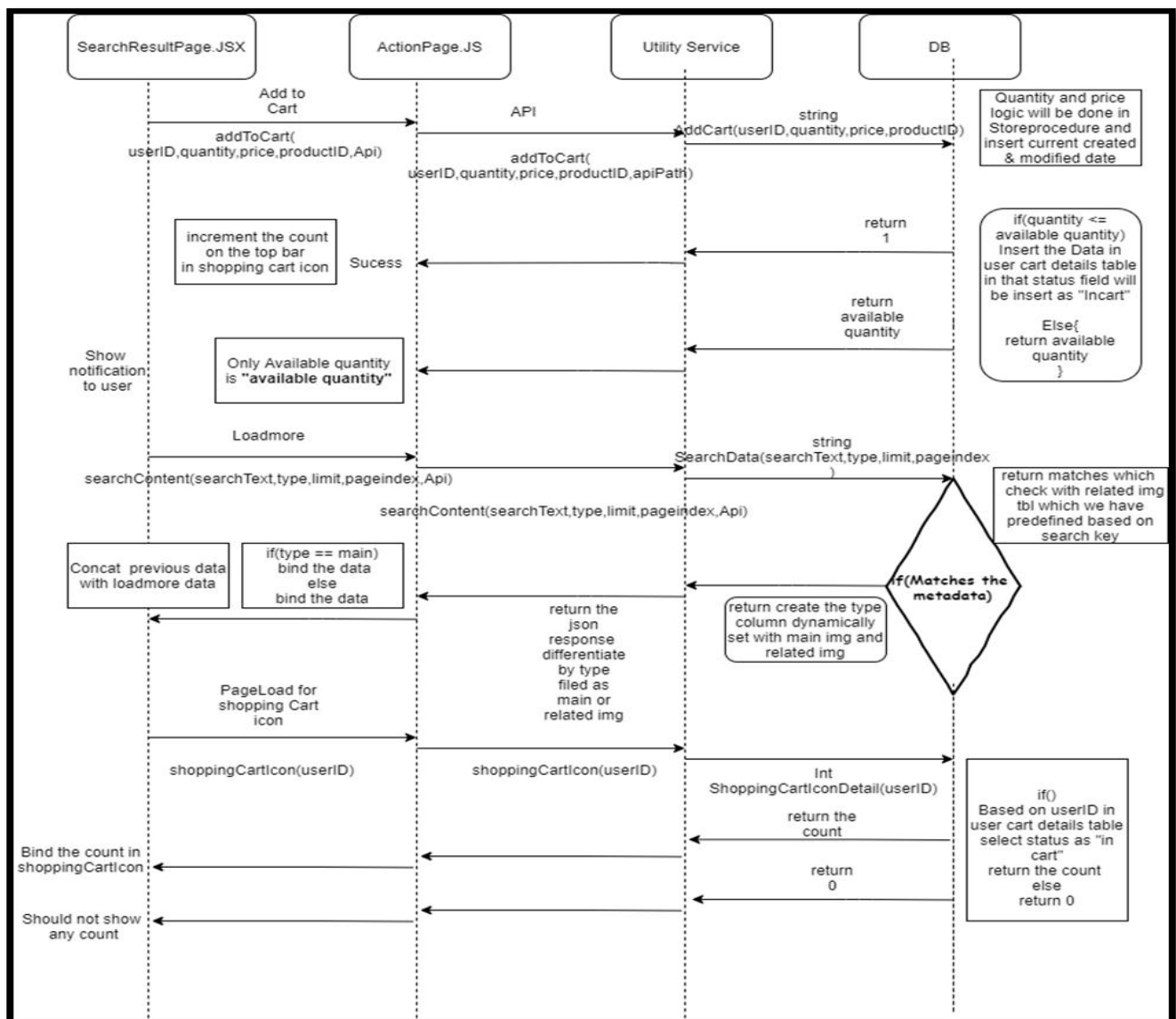


Fig -4: Search Result Page

3.4 SHOPPING CART

The “Load more” functionality in ‘ShoppingCart.JSX’ invokes the “ViewCart” method. The “Load more” functionality in ‘ShoppingCart.JSX’ invokes the “ViewCart” method with the userID, limit, and pageIndex. Removing the specific product in the cart can be done by clicking “Remove” button. This is done by invoking the “Remove from Cart” button. Once successfully done this will decrement the count on the “Shopping Icon” present in the header. On clicking the “Continue shopping” button, user will be navigated to the LandingPage.JSX. On clicking the “Clear cart”, the “clearCart” method will be invoked. On successfully clearing the cart, 1 is returned to the front end indicating success. On clicking the “Place Order” button the “placeOrder” method is invoked

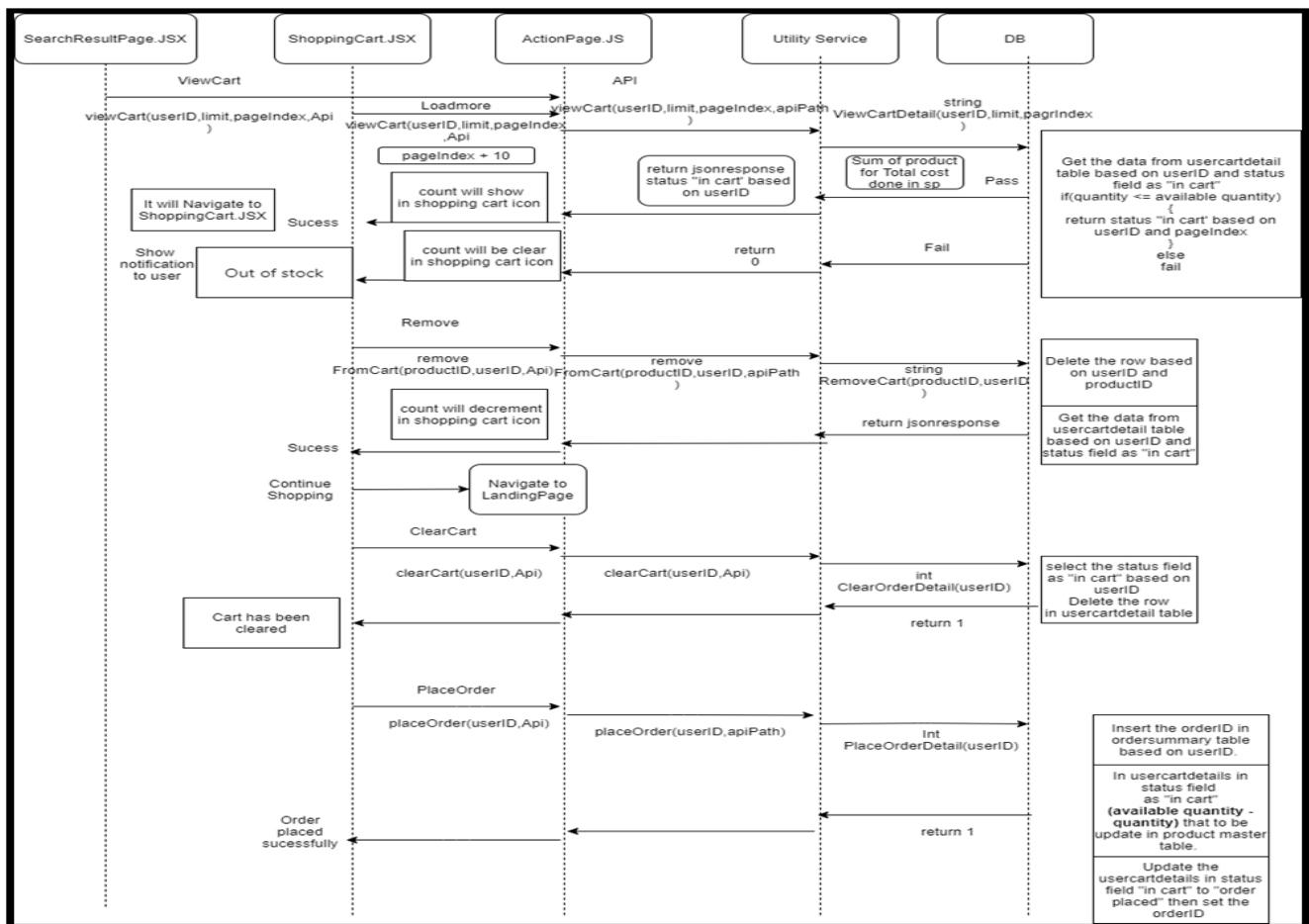


Fig -5: Shopping Cart

4. CONCLUSION

Thus from the above explanation this methodology satisfies the needs of getting the exact product which the customer requires without any waste of time. The look and feel approach is implemented. The important feature is that, in addition to the normal text search of the product, image search can also be done by uploading the corresponding image and the relevant products are displayed. Since the image can be uploaded in the search bar, the exact and relevant products corresponding to the given image are displayed. This provides much convenience in identifying the exact product needs by the customer and saves a lot of time. Though we can speak of the advantages, this relevant image search can be limited to only those products which are uploaded manually. This limitation can be overcome by uploading a wide number of products. This advancement in our project is possible in the mere future.

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