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Real Time Internationalization and Information Dissemination for Object Identification using Image Processing Algorithms

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Abstract*: *As more corporate users are moving from one country to the other it's difficult for them to keep learning new languages as the duration of stay by corporate businessman's is less but it's important that when they arrive at any country for work they should be able to get their daily necessities and other shopping items in local languages. Here there is a catch that they cannot speak the local language to get the product. In this research we will be addressing this issues by giving them a tool which will identify the object in real time and internationalization the information for them by this process and using the tools provided they can get what they want in limited time frame which they stay in international countries. This research will help solve the problem of purchase of products from international market without knowing the local language of the country the solution will identify the objects in real time and then internationalize the information about the product which the customer wants to purchase also voice over will be added so that the object which is identified will be pronounced in the local language where the sale person will understand what the customer wants.

Keywords: Information Internationalization; Information dissemination; Image Processing; Object identification.

I. INTRODUCTION

As customer moving from different countries require different data and information about the products it's important to internationalize the information for products to be purchase by the customers. This research work focuses on information internationalization where any object or product which is identified will be captured and presented to the customer and the sales person in internationalized way so that the seller and the buyer can purchase and sell the products in local languages. In this research work following literature review has been carried out. 1. In the first reference, the author focuses on how virtual businesses are growing day by day and it's important that we should be able to internationalize information in this globalization era.

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Trade between organizations can only be done when businesses in different countries and different locations collaborate and exchange information and understand the business needs in the local language they understand thus the purchase orders and team collaboration can be done in an internationalized way. The author focuses on the methods and ways in which internationalization can be achieved and businesses can collaborate for productive future prospects [1], [2]. 2. In the second research article, the author focuses on how internationalization of information plays a vital role in teaching and learning and how courses can be internationalized so that students can get maximum gain from available teaching material from different countries and read and used it in their local languages [2], [3]. Text data and video material online for teaching and learning can be internationalized in different languages focusing on student's perspective for understanding the teaching and learning material. Students can also submit assignments and exercise material online and the data is translated to an international format where the faculty or doctor in charge can evaluate the students work and assign him marks based on these assignments completed. 3. In third research work carried out by the author who focuses on how exporting and importing educational services will help build knowledge of students and faculty members by utilizing information internationalization [3], [4]. As knowledge and economy go hand in hand it's important that the knowledge consumers and producers are not left behind by the technological setback. Knowledge producers should be given all the tools required so that they produce better results and better contents which can be internationalized and be used worldwide without any limitation of access [5].

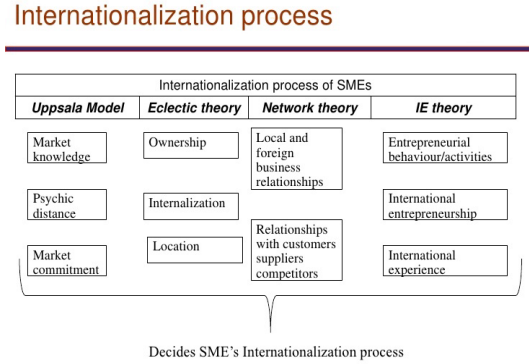

Fig. 1. Internationalization Process Model

II. RESEARCH OBJECTIVE

The object of this research work is to gain better knowledge and understanding of internationalization process which is followed in the small and medium scale industries and to help them to internationalize information in real time so that different stakeholder don't have to find out ways or need support for translation of information so that the purchase of the products can be done without worrying about how to purchase any product in the local market when they are out for shopping in a country which they are non-resident[6], [7], [8].

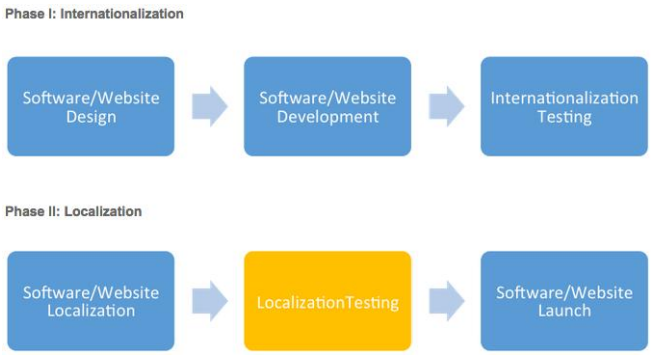

Fig. 2.Small and medium business product internationalization

In this research work following Research Methodology will be used.

- Qualitative and quantitative analysis methods will be applied in this research work
- Data mining and Data warehousing for internationalization of information will be performed [9]
- Data Collocation and Data Semantics will be done so that information can be internationalized on the fly in any given time to the end users
- Data mitigation and Data Migration engine will be set up for the transformation of information from one form to the other
- MOOCS Data will be internationalized and given to end users on demand.
- Small and medium scale industries data internationalization will be carried out on demand using web services deployments [10], [11].

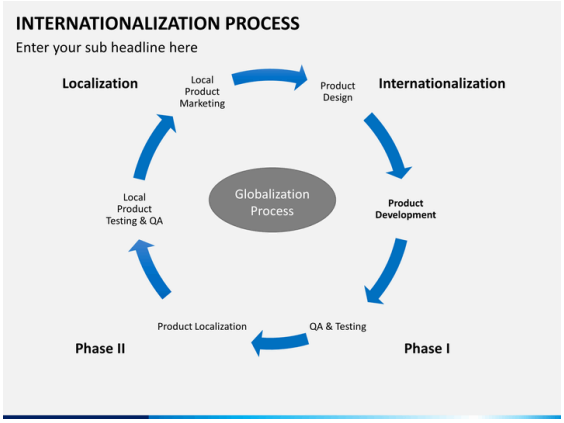

Fig. 3. Internationalization Phases and Processes

III. PROJECT MANAGEMENT PLAN

This research work will have the following Management Plan as software engineering has different models for designing the solutions we will follow

- Requirements Gathering and Requirement Capturing process to collect stakeholder's information
- Specification analysis for the research work will be done and specification document for the research will be created [12], [13].
- The Design activity will involve different stakeholder who possesses knowledge of internationalization processes [14]
- The deployment phase will have all the key components which are designed in the design process with the business logic to work in synchronization so that the target applications work for internationalization. The server will hold the deployment code modules and services [15], [16], [17].
- Testing of the applications and the services which will be designed will be carried out and the virtualizations servers which will act as testbeds and testing servers.
- The last and the final stage in the project will be production server which will hold the codes and the services which will be running online on the production servers and maintenance will be carried out remotely on virtualization servers running VM's [18], [19]

IV. PROJECTED OUTCOMES AND THEIR APPLICATION

The results of this research work include the following.

- Internationalization of information and dissemination of information to small and medium scale businesses
- Internationalization and information dissemination for the educational sector where the courses will be internationalized and the MOOCs contents will be available to the end users [20], [21]
- Semantical data can be used for analysis of topics for internationalization in small and medium scale industrial meetings [22], [23]

V. METHODOLOGY FOR RESULTS IMPLEMENTATION

This research work will be implemented using following methodology

- Requirement collaboration and data Analysis in this phase requirement from different stakeholders involved in the project was collected. Objects that need to be identified using the solution were identified and kept ready in the repository data collection about these images which were under identification in real-time need to be stored in the data warehouse which was created for the system under development.

- Requirement analysis is one of the most important phases of project management and software solution which is implemented for execution and identification of the real-time images need input from different sources for testing. Image data from different sources and different resources were collected so that the algorithm can be trained to identify the images which are ready for processing immediately with exact accuracy. Algorithm optimization was carried out to provide more accuracy for image identification in least amount of time possible so that the end user when using this solution need not wait for long time for executing the algorithms and detecting the images in real-time. Information internationalization was carried out in real-time so that once the image is identified that internationalization of that object can be done in real-time.
- Requirement gathering and data execution In this phase the requirement was gathered from different online and offline sources such as research articles, magazines and research resource persons who were involved in this research project. Requirement gathering is important for proper execution of the research project the requirement which is collected will also help in identifying the different components which are required for execution of this research work also with the help of requirement gathering it will be easy for selecting the algorithms which will provide appropriate results for the requirements which are laid down by different stakeholders. Requirement was documents using different tools which are available for documenting purpose only this will help in further referring to the requirement during the research execution stages and phases of software development.
- Requirement Capturing using brainstorming technique which will help in collecting different views and opinions about the research work which will be carried out. Prior to development and the design of this research project lot of brainstorming sessions were conducted with different key resource persons and also data regarding these sessions was stored different questioners were prepared for brainstorming stakeholders and other resources so that their views and opinion about the solution can be collected and their usage strategies can be checked and taken into consideration while designing and programming the solution. This data was collected and stored in program which is specialized for brainstorming which is Borland brainstorming tool with the help of this tool it was easy to record and maintain the brainstorms which were conducted for different stakeholders and the data can be used for further processing and design.
- Designing solution for Internationalization of information and dissemination [24]. The solution design included different design component such as input box where the user can enter their data and this data can be stored in the database for further processing if required. Different select options were designed where the user can select the internationalization language in with the stakeholder would like their internationalized information to be displayed after the object is identified in real-time the information will be displayed in real-time for the object which is under investigation by the image processing algorithm. Some more controls have been provided to the end user so that the user can select based on his requirement which object he needs to identify.

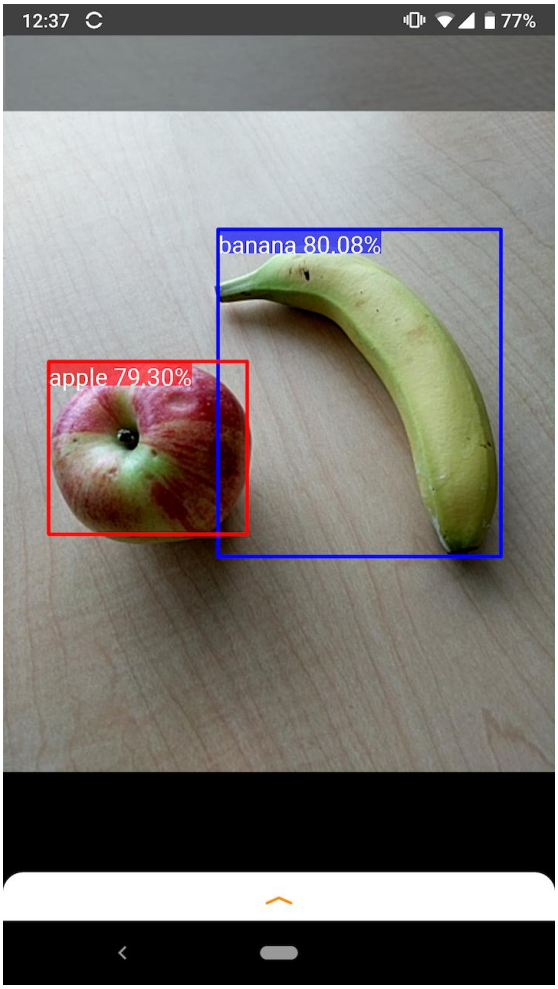

Fig. 4.Object Identification and Related Information

In the above figure 4. two objects where placed on the table for identification. The application was started on the mobile device and the identification of the objects where done the information regarding these two objects which was identified was displayed on the object itself. The objects which have been identified as apple and banana in real-time and information regarding the objects is disseminated in real-time collection of data regarding these objects information dissemination is stored in the database where is can be further processed for internationalization.

Table 1 shows the test cases which have been designed for the execution for identifying the error in the program code and data collected from different test cases after execution.

Table- I: Test Case Design

Test ID	Test Scenario	Test Case	Pre-Condition	Test Steps	Test Data	Expected Results	Post Condition
TC_LOGIN_01	Check For Correct Login	Enter Correct User details	Need Valid Email ID for Processing	Enter Credentials and click the login	Validate Credentials of the user	All credentials validated allow login	Email Sent for verification of user
TC_CKCAM_02	Check Back Camera is active	Click on the camera button	Check if the signal API is given to Camera	Click on the Camera Button on the app	Check camera by taking photo of object	Camera is working properly	Checking camera
TC_CKIMG_03	Check Image is identified by camera	Validate Camera Check and object Identification	Check for algorithm functioning for Image	Run the image processing Algorithm	Input from the camera detected as image	Image Identified by the camera	Check if the algorithm is running and output
TC_CKALG_04	Check the output from the algorithm	Data validation from the algorithm under execution	Check if the algorithm is functioning correctly and with required outcomes	Data validation from the algorithms under execution	Input and output from the algorithm is working correctly	Object identified correctly from the algorithm	Data collected from the algorithm after program execution
TC_CKOBJ_05	Object Identified and data collected	Check for the algorithm and the object identification	Object placed in the identification area for detection	Click on the camera and the object identification tab	Camera is selected and the object is detected	Object identified by the algorithm and displayed	Information displayed for the identified object
TC_CKINT_06	Internationalization of data for identified object	Check for the object identified and then internationalize the information	Object detected and information collected need internationalization	Check for the internationalization object Tab and click on the language preference	Input from the user for conversion of data to required format	Information about the object displayed in required format	Collection of information regarding the object
TC_CKWEB_07	Running web service for identification process	Checking if the web services are running in the current context for identification	Need web server to be running to run the web services online	Check for the web server is running and the web services are configured correctly	Web services are running on the web server	Web services are functioning correctly for the result	Running web server and the configuration of web services

- Designing web-services for Internationalization of information and dissemination.

```
definitions: {
 - User: {
      type: "object",
    - properties: {
        - birthDate: {
              type: "string",
              format: "date-time",
              description: "Birth date should be in the past"
          },
        - id: {
              type: "integer",
              format: "int32"
          },
        - name: {
              type: "string",
              description: "Name should have atleast 2 characters"
          },
        - posts: {
              type: "array",
```

Fig. 5.Webservice for object

In the above figure 5. the web service for object identification is written where the type of object is the image which need to be stored and identified and information regarding these objects need to be stored in the repository. The data which is collected from the image is formatted into different datatypes which can be further processed and linked to the image under identification this will help in enhancing the data speed for processing by the algorithm

- Integrating web-services with web applications so that the data which is collected from the web service can be processed and the resultant information can be displayed on the web application for the user to view resultant output of the processing time taken by the algorithm and the image under investigation also the information about the image is displayed on the web application and other user related information.
- Deployment of Web-services on virtualization technology environment and testbed design for deployment process different testing techniques have been used for testing this application, code box testing and interactive user box testing tools have been used and different test cases have been designed for executing the tests for the application development and at different phases different testing were carried out to check if the program generates the required results. The data input is given to the test cases and the resultant input and output are compared to check the results is the matching is found then the program behaviors is exact else the program need to be check for accuracy. This is required at different testing stages as at different stage the output from the software is different and need to checked with the required and resultant if both the standard output expected and the output coming after running the solution are same then the project is executing correctly and with proper efficiency.

- Black box testing is carried out to check the user interface which is designed is working correctly as desired and the functions are working properly after giving correct input to the software solution is working as desired. White box texting is done to check the code if it is working correctly and the output required from the code is functioning correctly and desired level of outcomes are received from the code.
- Deployment of Web applications and integration with web-services on virtualization technology environment and testbed design for deployment process [25]. Virtualization will help in running the web services online the web server can be created on the virtualization environment using the AWS and the services which are designed using the programming environment can be deployed on this web server this till provide good uptime and also the performance of the virtual machine can be optimized based on the requirement for execution of the algorithm which are running on the webservers.
- Maintaining and running web-services on testbed and production servers
- configuring on the fly Internationalization of information and dissemination [8], [10].

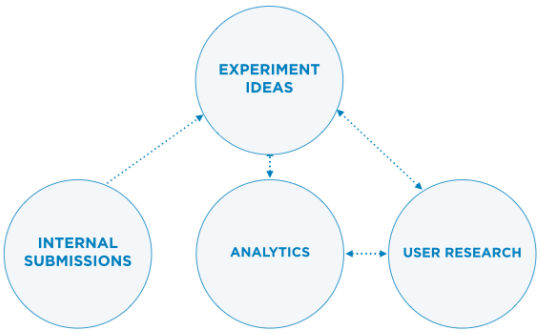

Fig. 6.Methodology for research implementation

VI. CONCLUSION

Last but not the least I would like to conclude by saying that this research work would help in identifying objects which is captured by the camera in realtime and provide instant help by internationalization of the information about the object. This research work provides help to stakeholdeers when they are travelling and would like to speak in native language about the object identified by the image under investigation so that the conversation about the object can be done easily in the native language.

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