Reminder App using OCR, Redux and MongoDB Cloud

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1 Abstract

The main purpose of the project is to store the personal details of the users like driving license, guarantee card etc.Two types of documents can be stored. One is personal documents like driving license, passport etc. The other one is general documents like warranty card, bill etc. This application can be used not only for tracking the expiry dates but also for just storing the documents like Aadhar card, pancard etc. This mobile app sends reminder notifications to users and their family members who has access, when the expiry date is nearing. Another purpose is for the business end where the companies can perform analysis with data, to view performance and statistics of their product. This project uses react native for the frontend of the application which is a cross platform language. Redux is used for state management as this project will have complex states which need to be handled efficiently. The backend is implemented in MongoDB cloud platform and it consists of Nodejs which acts as a middleware and MongoDB as a database. It uses Google ML kit for extracting the text from the scanned documents and Nodejs is used to store the extracted data in the database.

2 Objectives of the proposed system

The main objective of the project is to track the expiry dates of important documents of users like driving licence,passport,warranty etc. and notifying the users and their

family members when the expiry is nearing.This application can be used not only for tracking the expiry dates but also for just storing the documents like Aadhar card, pancard.Another objective is for the business end where the companies can perform analysis with data, to view performance and statistics of their product.At the user end,the statistics of the products will be displayed.

3 Overall System Design(Architecture diagram)

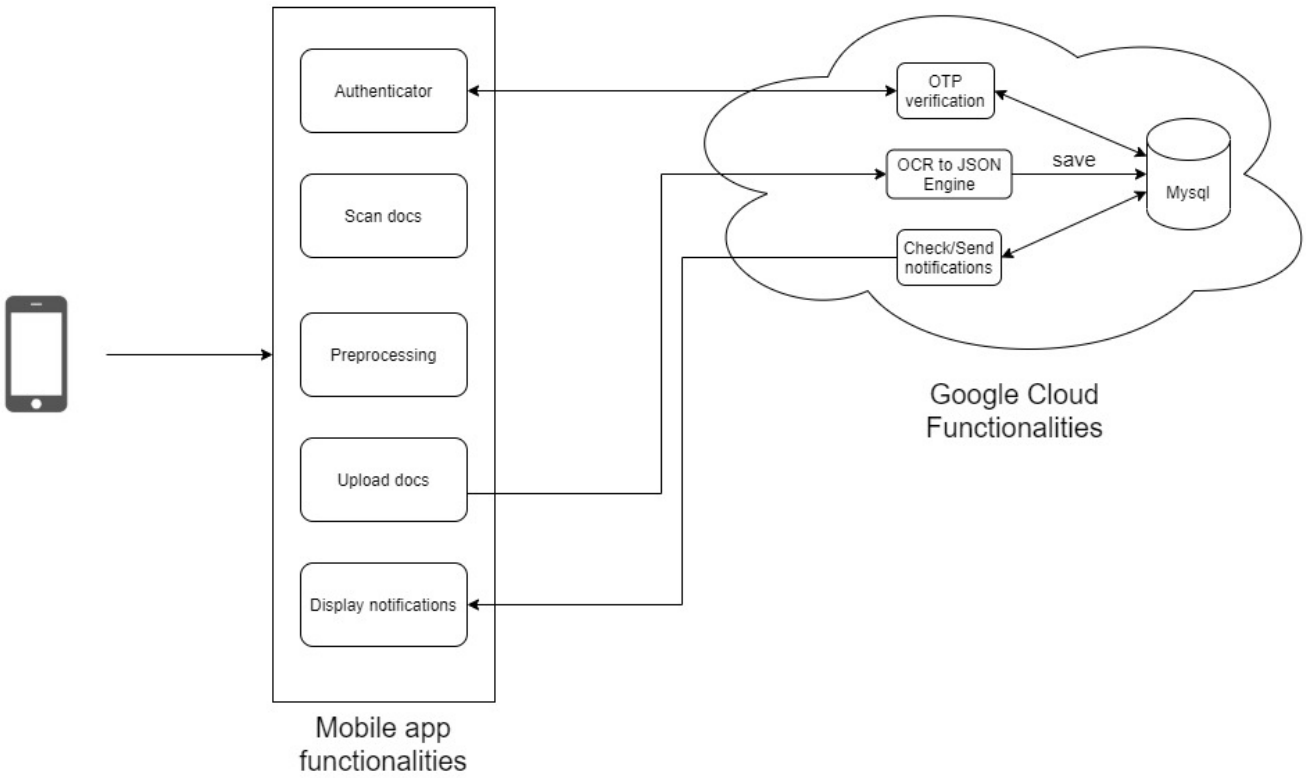


Figure 1 Architecture : TED and Analytics app - User End

In the authenticator functionality, the user is given access to the application through OTP verification. Once the user is authenticated, he/she can scan any documents and upload. When the user uploads the documents, the details are extracted using OCR and it is stored in MongoDB database. The user is notified one or two weeks before when the expiry date is nearing.

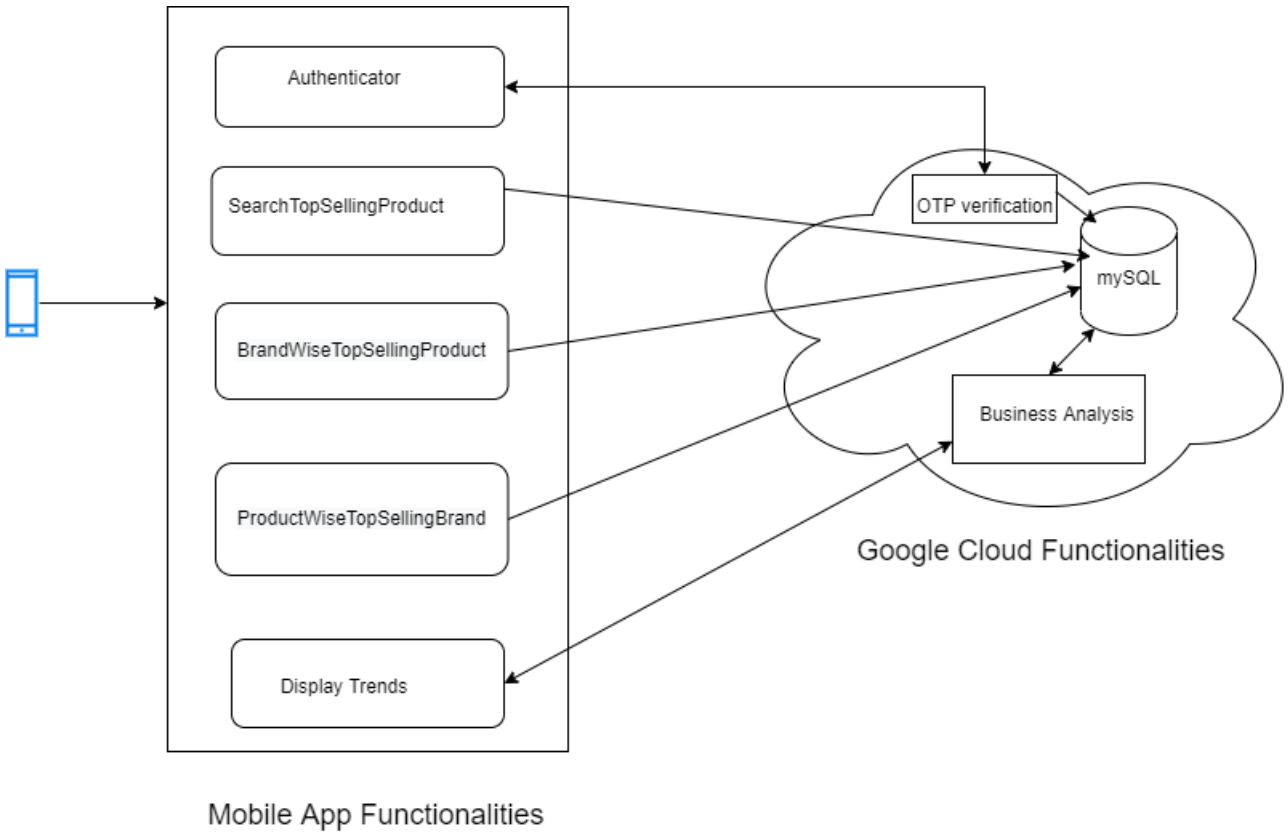


Figure 2 Architecture : TED and Analytics app - Business End

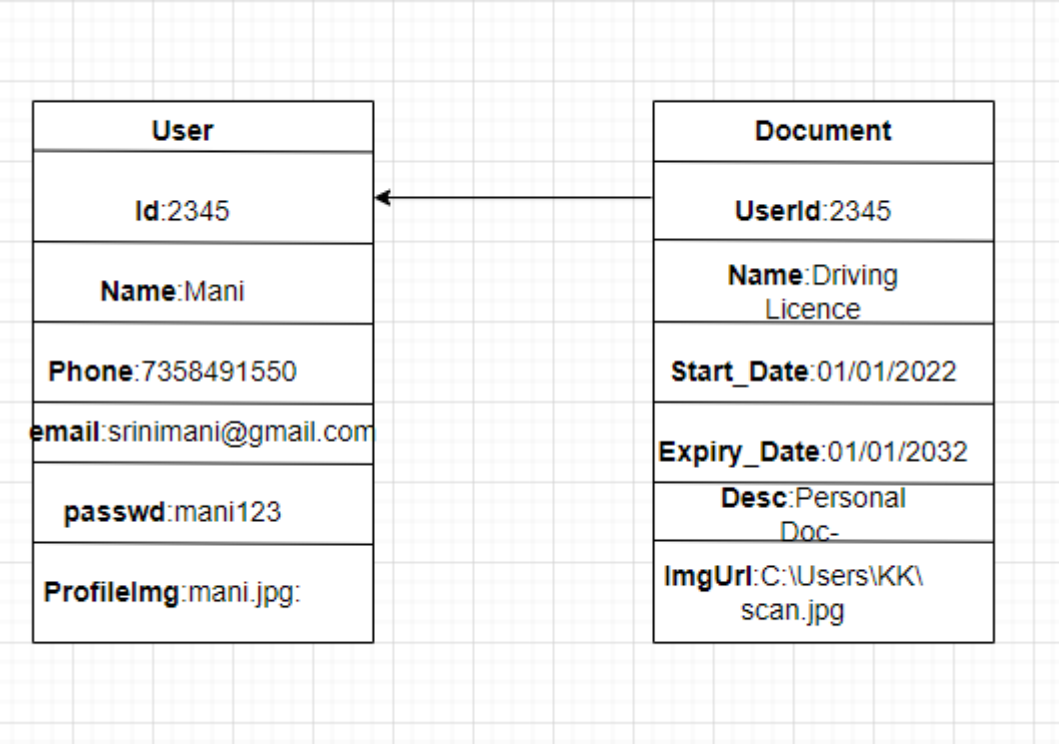
Once the business user is authenticated, the users can perform business analytics. The analytics which can be performed are as follows:

SearchTopSellingProduct : Queries the top selling product among all brands for the past 1 week.

BrandWiseTopSellingProduct : Queries the top selling product for a particular brand. Eg : Mixie - butterfly

ProductWiseTopSellingBrand : Queries the top selling brand for a particular product. Eg : Preethi - grinder

3.1 Database schema



4 Algorithms/Techniques used with complexity

4.1 Authentication

INPUT : Phone Number **OUTPUT** : Valid/Invalid

- Enter the Phone Number
- Check whether it is valid or invalid
- If valid
  - Send OTP to the number
  - Enter the OTP
  - if OTP is valid return success and login
  - else return failure
- else return failure

4.2 Scan, Upload and Retreive image

INPUT : Image **OUTPUT** : Success/failure

- Click the scan button to select image from device.
- Click the camera button to capture image through live camera module
- Save and Convert the image from OCR to JSON.
- Store the JSON in database.
- If successful
  - Click the uploaded docs button
  - Retreive the images
- else
  - return error message

4.3 Display Notifications

OUTPUT : Expiry date notification

- Retreive the expiry data of a scanned document from database.
- If the expiry month falls in the current month
  - Send reminder notification to the user

4.4 Business Analytics

4.4.1 SearchTopSellingProduct

OUTPUT : Top selling product

- Retrieve data from database for all products for the past 1 week.
- Find the top selling product by analysis
- return the product name with count
- Eg : Washing Machine

4.4.2 BrandWiseTopSellingProduct

INPUT : Brand name **OUTPUT** : Top selling product

- Enter the brand name
- Retrieve data from database for all products(particular brand) for the past 1 week.
- Find the top selling product by analysis
- return the product name with count
- 1) Eg : Input : Butterfly , Output : Mixie
- 2)Input : Preethi , Output : Grinder

4.4.3 ProductWiseTopSellingBrand

INPUT : Product name **OUTPUT** : Top selling brand

- Enter the product name
- Retrieve data from database for all brands(particular product) for the past 1 week.
- Find the top selling brand by analysis
- return the brand name with count
- 1) Eg : Input : Mixie , Output : Preethi

5 Literature Review and Feasibility

Google ML Kit documentation - In this documentation, how the texts are extracted from the document is explained with examples. It can recognise the text in real-time. The heirarchy of the extraction is Block, Lines and Element.

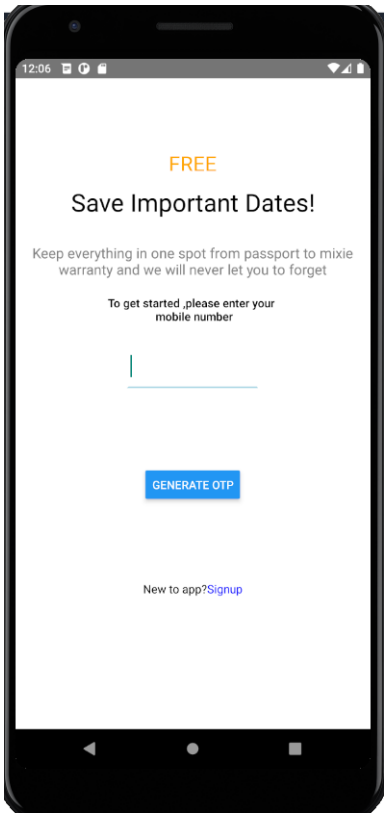
Redux Toolkit documentation - In this documentation, how the state is managed is explained from the basics. It explains about creating a slice, configuring a store, creating reducers for a slice etc.

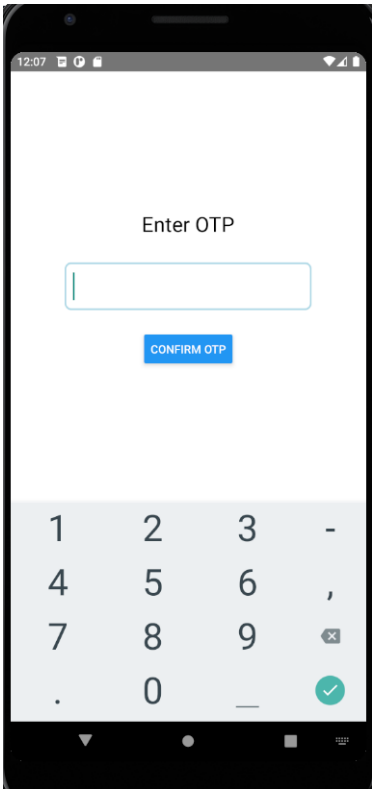
Redux is used to manage the state of the app globally. It makes it easier to read the code who has the knowledge of redux. Debugging of an application is quite easy when we use redux. It is to easy to debug by printing the states. Redux also has

great Devtools which allows to time travel which is very useful in debugging an large application. Redux also implements some performance optimisation internally so that our connected components re-renders only when it is actually needs to. An alternative to Redux is Context Api.

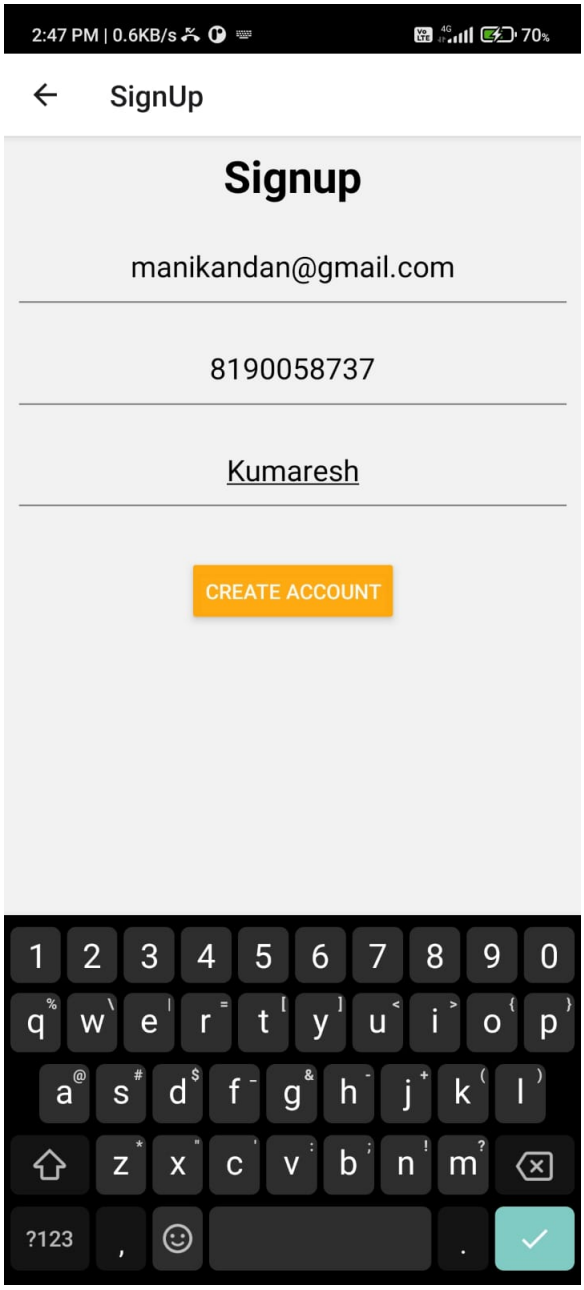
6 Completed Modules

6.1 Authentication

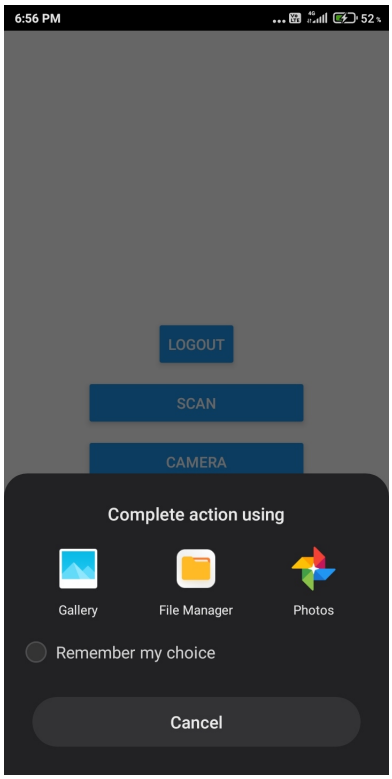




6.2 Signup

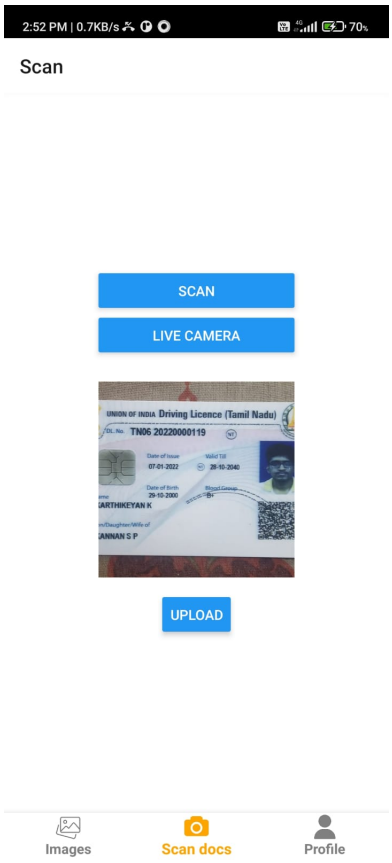

2:47 PM | 0.6KB/s
70%
SignUp
Signup
manikandan@gmail.com
8190058737
Kumaresh
CREATE ACCOUNT

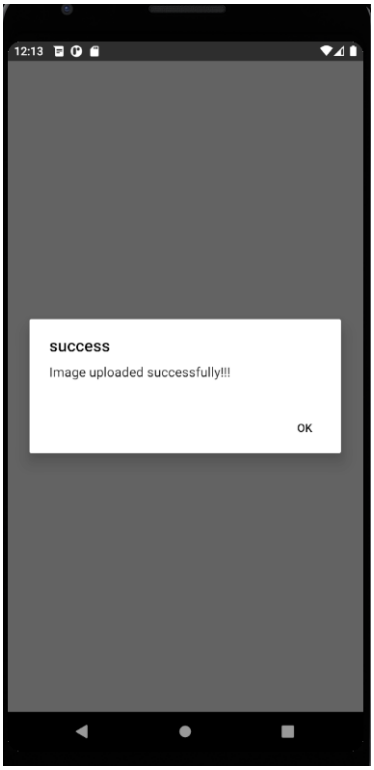
6.3 Scan

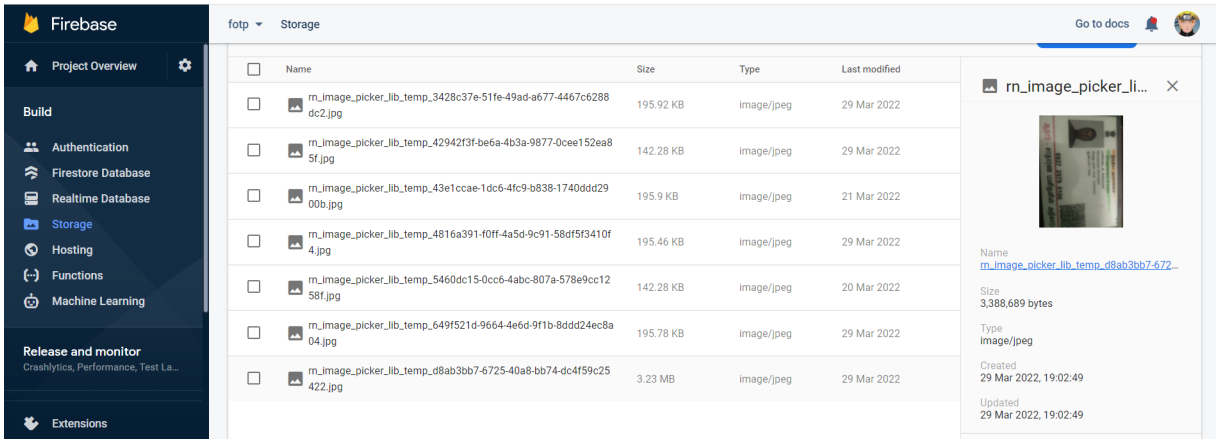

6:56 PM
52
LOGOUT
SCAN
CAMERA
Complete action using
Gallery
File Manager
Photos
Remember my choice
Cancel


UNION OF INDIA Driving Licence (Tamil Nadu)
DL. No. TN06 20220000119
NT
Date of Issue
07-01-2022
Valid Till
NT 28-10-2040
Date of Birth
29-10-2000
Blood Group
B+
Name
KARTHIKEYAN K
Son/Daughter/Wife of
KANNAN S P

6.4 Upload


2:52 PM | 0.7KB/s
70%
Scan
SCAN
LIVE CAMERA
UNION OF INDIA Driving Licence (Tamil Nadu)
TN06 20220000119
UPLOAD
Images
Scan docs
Profile


12:13
success
Image uploaded successfully!!!
OK


Firebase
fotp
Storage
Go to docs
Project Overview
Build
Authentication
Firestore Database
Realtime Database
Storage
Hosting
Functions
Machine Learning
Release and monitor
Crashlytics, Performance, Test La...
Extensions
Name
Size
Type
Last modified
rn_image_picker_lib_temp_3428c37e-51fe-49ad-a677-4467c6288dc2.jpg 195.92 KB image/jpeg 29 Mar 2022
rn_image_picker_lib_temp_42942f3f-be6a-4b3a-9877-0cee152ea85f.jpg 142.28 KB image/jpeg 29 Mar 2022
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Name
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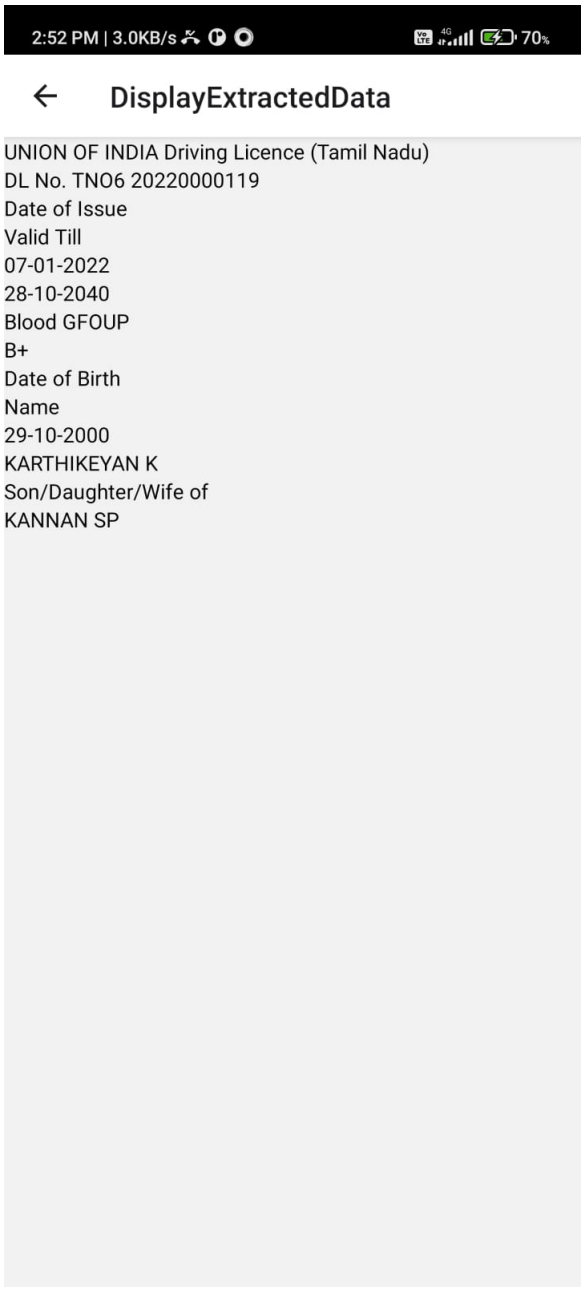
Size
3,388,689 bytes
Type
image/jpeg
Created
29 Mar 2022, 19:02:49
Updated
29 Mar 2022, 19:02:49

6.5 Text extraction



For the business users, the statistics of a product will be displayed when the user searches for that product. The user can get an idea about the product's selling rate etc.

7 Expected Outcomes

- Expiry Date Notifications to users for driving licence,passport,Warranty card etc.
- Top selling brand of a product.

- Top selling product of a brand.
- Top selling product.

8 Topics yet to be Completed

- Performing OCR to JSON in extracted text
- Provide access for family members
- Display Notifications for Expiry date and recommendations.
- Business Analysis for product modules

References

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[2] J. Mantas, "An overview of character recognition methodologies", Pattern Recognition 19 425-430 ,1986

[3] G. Nagy, "At the frontiers of OCR". Proc. IEEE, 80 1093- 1100 ,1992

[4] L. O' Gorman, R. Kasturi, "Document Image Analysis", IEEE Computer Society Press. Los Alamitos, C.A , 1995

[5] Martínek, J., Lenc, L. and Král, P. "Building an efficient OCR system for historical documents with little training data," Neural Comput and Applic 32, 17209–17227 ,2020.

[6] Bonnie Eisenman,"Learning React Native: Building Native Mobile Apps with JavaScript 1st Edition, " O'Reilly Media; 1st edition ,2003