

# Expiry Reminder

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## Abstract

An expiry date is the date when a food product spoils and may no longer be eaten safely or when a contract or other condition become no longer valid. As we all know the date on which something can no longer be used or is no longer safe to eat is called as expiry date. The main problem which arises is most of us don't remember when the product is going to get expired or has already expired. Picky kids, busy lifestyles, and poor planning are a few reasons so much of what we toss into our grocery carts winds up in garbage cans. But another major factor is a misconception about what all of those date labels on food packages—"sell by", "use by", "best by", and the like—really mean.

**Keywords: Food Products, Documents, Category, MSER, OCR**

## I. INTRODUCTION

Most consumers don't realize that they're really more about food quality than food safety, says Robert Gravani, Ph.D., a professor of food science at Cornell University. Food may not be at its peak after those dates, but such factors as staleness and color change are quality problems, not safety concerns. The truth is that in many cases, food on a shelf—or even in a fridge—past the date on the package is fine to eat. That "expired food" doesn't have to be thrown away.

"Foodborne illness comes from contamination, not from the natural process of decay," says Dana Gunders, a staff scientist at the Natural Resources Defense Council and the author of "Waste-Free Kitchen Handbook" (Chronicle Books, 2015). And our senses are well - equipped to recognize decay. Foods past their prime might develop mold, become rancid, or spoil in other ways, but they are likely to look, smell, and taste bad before they actually become unsafe to eat. There's no federal requirement that foods carry a date label except for infant formula, for which the concern is nutritional quality, not safety.

## II. EXPIRY REMINDER DEFINITION

Expiry Reminder is the application that'll ensure you never miss another deadline again. It's simple, practical and easy to use and unlike other calendars only requires few inputs to set up. With Expiry Reminder you can track not only validity of your IDs (driving license, passport, credit card etc.) but Expiry Reminder can also remember for you when your medicines and food items are going to expire. These will also include the dates of warranty of product that will help the users to know when their product will be out of warranty. This software will also help us keep our Government documents up to date and remind us before they expire.

Expiry Reminder is the software of giving a reminder to the user about it's product that when the product is going to expire prior to the date of expiration which will help to avoid food waste.

## III. EXPIRY REMINDER PROCESS

The life cycle of a expiry reminder project consists of six phases. Moving back and forth between different phases is always required. It depends on the outcome of each phase. The main phases are as follows,

- 1) Registration: This phase consist where the user has first to register himself by entering his personal details such as Name, Email ID, mobile number, password, etc.
- 2) Login: After successful registration the user proceed to the login page where a unique username and its equivalent password need to be entered.
- 3) Select Category: In this phase user has to select the category type where there are lists of option such as Food, Document, Drugs, Electronic, etc.

- 4) Expiry Date: In this phase, user has to enter the expiry date, there are two options for it either manually or by using the camera of their smartphone to scan the text printed in the product.
- 5) Reminder: In this stage the software is giving input by the user about the number of reminder for a specific product that is the number of times user is notified about his/her product.
- 6) Notification: It is the last stage of the project where the user gets the reminder of a product in two ways, either by a normal text message or by an email to the registered mobile number and email ID respectively.

#### IV. FLOWCHART

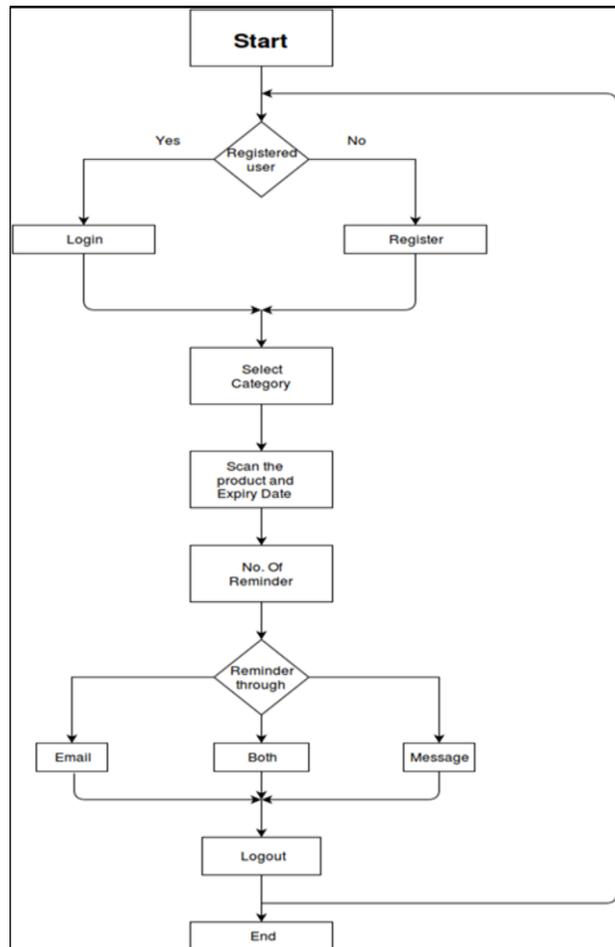


Fig. 1: Flowchart of the expiry reminder software.

The software has user friendly GUI (Graphic User Interface), where the user will easily operate the software. For using the software the user has to first register himself with proper credentials and based on which he will be provided with login Id and password. Whenever he wants to add an reminder he has to first login then only he can proceed. The software will be used to save multiple reminders at different intervals based on the expiration date. Option to add intervals are based on your own needs and fully customizable, all you need to provide is information of the documents and expiration date for documents. The user will be allowed to add up to 10 follow up reminders of each document at different intervals and never look at them again. All you need to provide is the expiration date, rest is done for you instantly. Reminders are scheduled in advance along with other perimeters such as email design, attachments and receivers information. The reminders are send to the user registered mobile number and email address prior the date of expiration.

#### V. ALGORITHMS USED IN EXPIRY REMINDER

##### A. Step 1: Detect Candidate Text Regions Using MSER

The MSER feature detector works well for finding text regions. It works well for text because the consistent color and high contrast of text leads to stable intensity profiles.

Use the detect MSER features function to find all the regions within the image and plot these results. Notice that there are many non-text regions detected alongside the text.

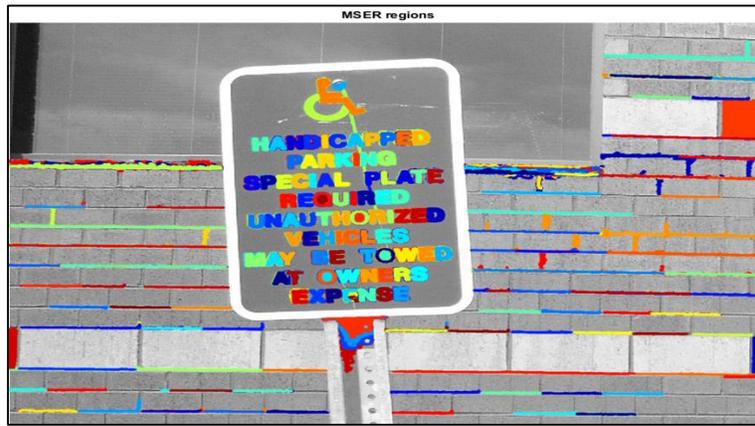


Fig. 2: Detect text and non-text Regions.

**B. Step 2: Remove Non-Text Regions Based On Basic Geometric Properties**

Although the MSER algorithm picks out most of the text, it also detects many other stable regions in the image that are not text. You can use a rule-based approach to remove non-text regions. For example, geometric properties of text can be used to filter out non-text regions using simple thresholds. Alternatively, you can use a machine learning approach to train a text vs. non-text classifier. Typically, a combination of the two approaches produces better results. This example uses a simple rule-based approach to filter non-text regions based on geometric properties.

**C. Step 3: Remove Non-Text Regions Based On Stroke Width Variation**

Another common metric used to discriminate between text and non-text is stroke width. *Stroke width* is a measure of the width of the curves and lines that make up a character. Text regions tend to have little stroke width variation, whereas non-text regions tend to have larger variations.

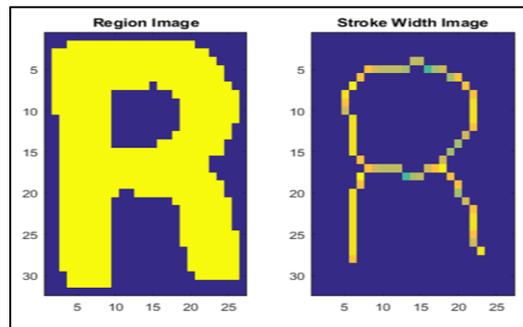


Fig. 3: Stroke Width Variation

In the images shown above, notice how the stroke width image has very little variation over most of the region. This indicates that the region is more likely to be a text region because the lines and curves that make up the region all have similar widths, which is a common characteristic of human readable text.

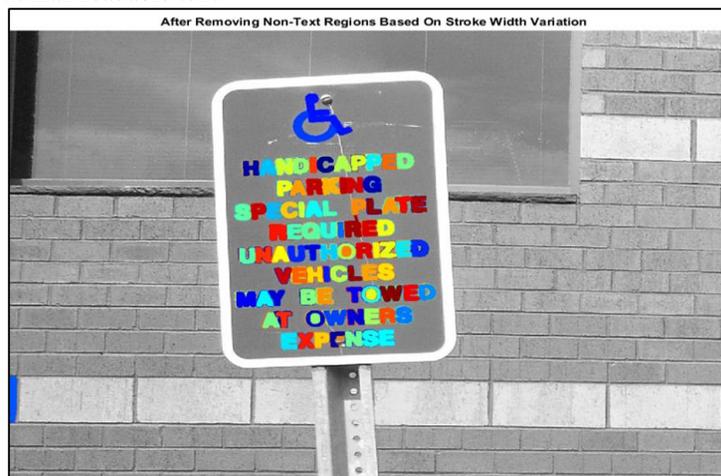


Fig. 4: Removal of Non-Text Regions.

#### D. Step 4: Merge text Regions for Final Detection Result

At this point, all the detection results are composed of individual text characters. To use these results for recognition tasks, such as OCR, the individual text characters must be merged into words or text lines. This enables recognition of the actual words in an image, which carry more meaningful information than just the individual characters. For example, recognizing the string 'EXIT' vs. the set of individual characters {'X','E','T','T'}, where the meaning of the word is lost without the correct ordering.

One approach for merging individual text regions into words or text lines is to first find neighboring text regions and then form a bounding box around these regions. To find neighboring regions, expand the bounding boxes computed earlier with regionprops. This makes the bounding boxes of neighboring text regions overlap such that text regions that are part of the same word or text line form a chain of overlapping bounding boxes.



Fig. 5: Merge Text Regions

Now, the overlapping bounding boxes can be merged together to form a single bounding box around individual words or text lines. To do this, compute the overlap ratio between all bounding box pairs. This quantifies the distance between all pairs of text regions so that it is possible to find groups of neighboring text regions by looking for non-zero overlap ratios. Once the pair-wise overlap ratios are computed, use a graph to find all the text regions "connected" by a non-zero overlap ratio. Finally, before showing the final detection results, suppress false text detections by removing bounding boxes made up of just one text region. This removes isolated regions that are unlikely to be actual text given that text is usually found in groups (words and sentences).

#### E. Step 5: Recognize Detected Text Using OCR

After detecting the text regions, use the OCR function to recognize the text within each bounding box.



Fig. 6. Detected Text

Text =

- HANDICAPPED
- PARKING
- SPECIAL PLATE
- REQUIRED
- UNAUTHORIZED

- VEHICLES
- MAY BE TOWED
- AT OWNERS
- EXPENSE

## VI. CONCLUSION

In this paper an attempt is made to define a software that will help us to remind the expiration of any product before it's expiry date which will avoid unnecessary food waste and higher grocery bills. As a software it extract information from databases which contain the expiration date of each product entered by the user and gives reminder to user either by a normal message or through mail. Here various algorithm is use such as MSER and OCR to detect text i.e., expiry date from the product and directly store it to the database.

## REFERENCES

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