# *Mini Project Report*

On

## Extracting numerical information from ship radar images using machine learning

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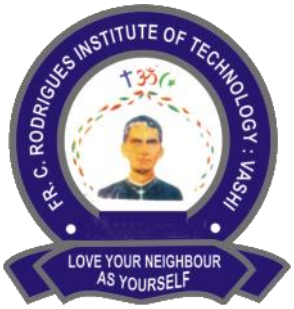


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# ACKNOWLEDGEMENT

We extend our sincere and heartfelt thanks to our esteemed ***guide,*** ***Ms.Suvarna*** and for her exemplary guidance, monitoring and constant encouragement throughout the course at crucial junctures and for showing us the right way.
We would like to thank other faculty members also. Last but not the least, We would like to thank our friends and family for the support and encouragement they have given us during the course of our work.

**CONTENTS**

# INTRODUCTION

Objective is to fetch text from radar images by using machine learning model. There are lot of radar images collected from ship which has ship location and information related to a ship at that particular moment/time.

Information is captured by equipment on-board the ship which gives output as image. These images we have to process and give output in flat file.

However, the detection systems are faced with the need to process massive amounts of incoming data and the requirement of nearly real-time capacity of reaction.

Many valuable studies have been carried out in this field, but these typical algorithms are usually effective only for common image analysis, not for the task of ship detection and classification in remote sensing images which often contains vast data and many background noises. Most of the conventional methods face difficulty in accuracy, performance and complexity.

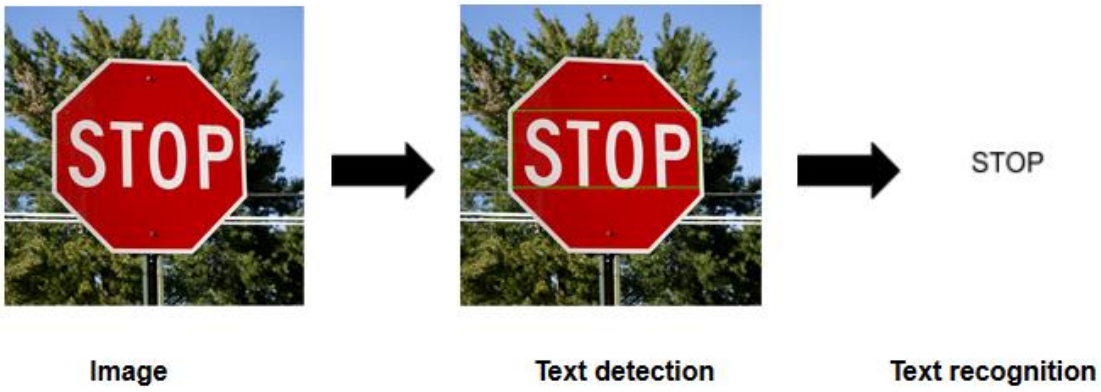
# Literature survey

## →OCR

OCR, or Optical(object) Character Recognition, is a process of recognizing text inside images and converting it into an electronic form. These images could be of handwritten text, printed text like documents, receipts, name cards, etc., or even a natural scene photograph.
OCR has two parts to it. The first part is **text detection** where the textual part within the image is determined. This localization of text within the image is important for the second part of OCR, **text recognition**, where the text is extracted from the image. Using these techniques together is how you can extract text from any image.

References:-
https://www.researchgate.net/publication/311851325_A_Detailed_Analysis_of_Optical_Character_Recognition_Technology

https://www.ijrte.org/wp-content/uploads/papers/v8i1/F2670037619.pdf



## →Keras-OCR

Keras-ocr provides out-of-the-box OCR models and an end-to-end training pipeline to build new OCR models.


References: -

https://keras.io/examples/vision/captcha_ocr/

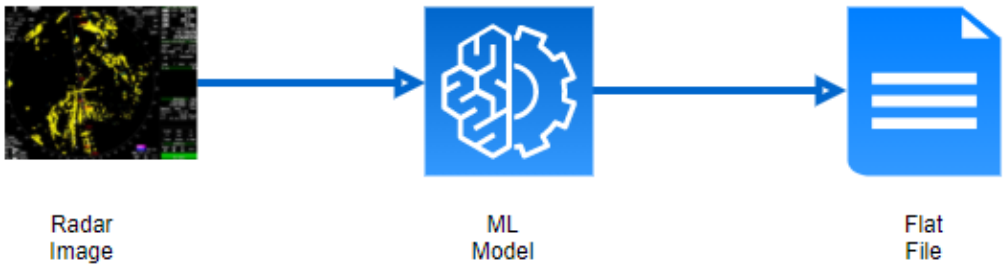
https://towardsdatascience.com/get-started-with-deep-learning-ocr-136ac645db1d

# IMPLEMENTATION

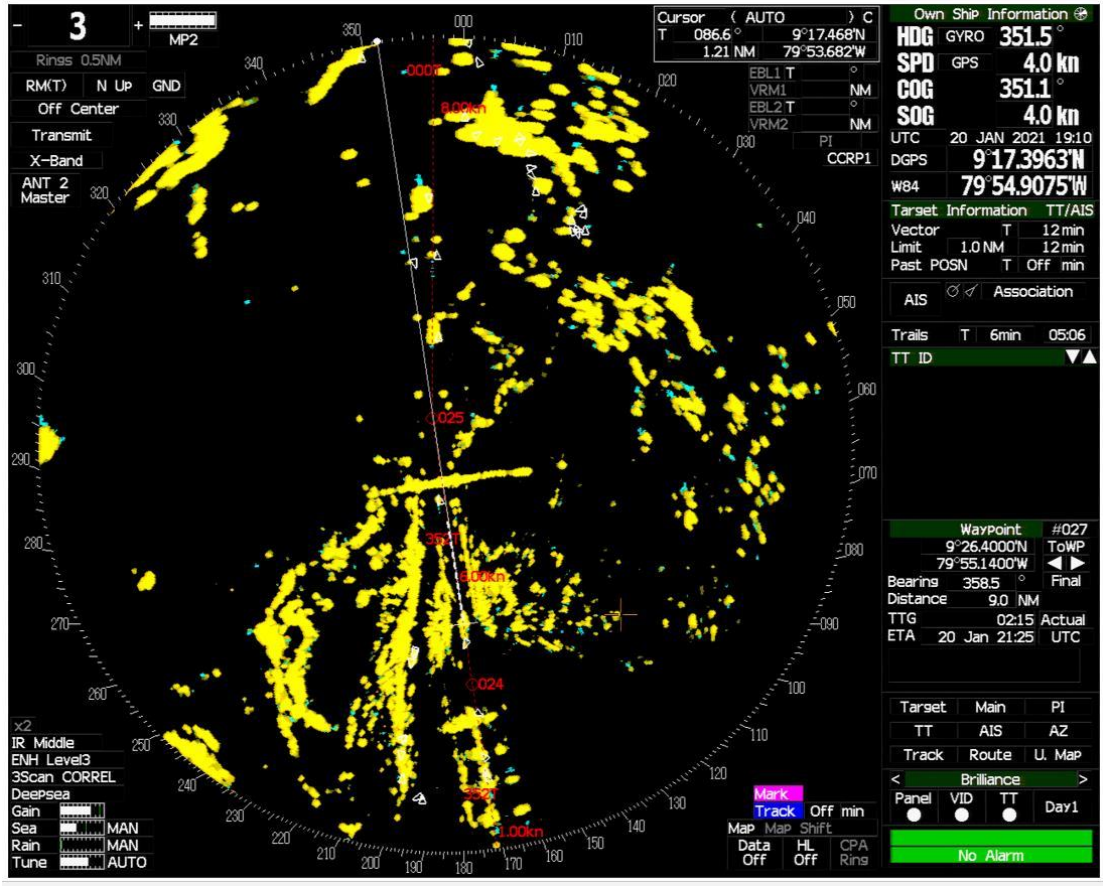
## ⟶*Technology Stack*

1. ***HTML***
2. ***CSS***
3. ***PYTHON***
4. ***FLASK***
5. ***JAVASCRIPT***
6. ***KERAS-OCR***

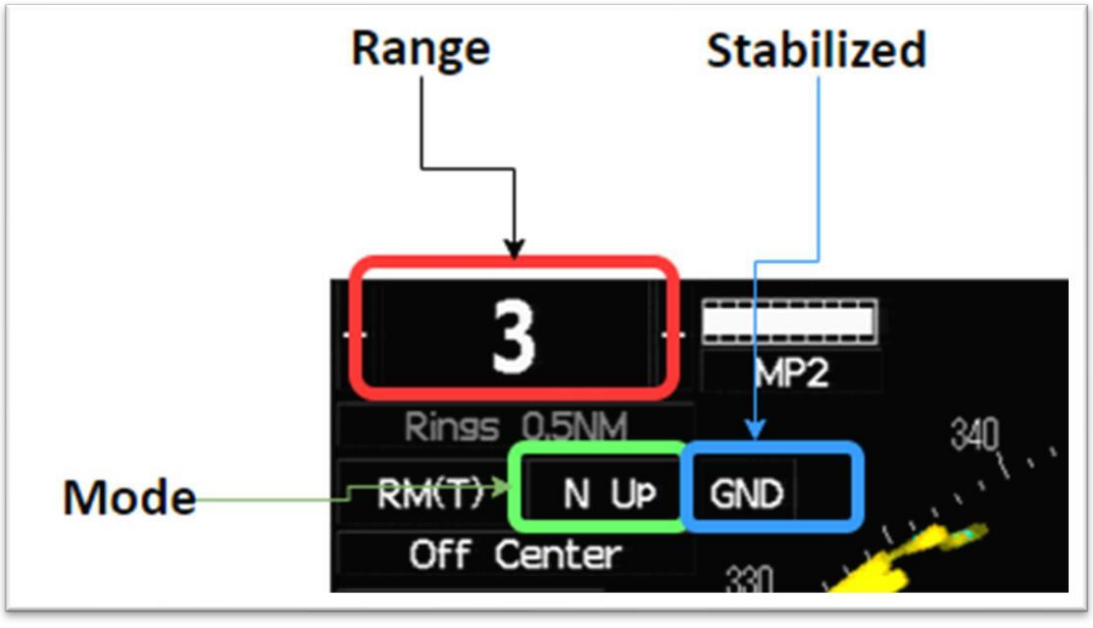
## ⟶*Process Flow*

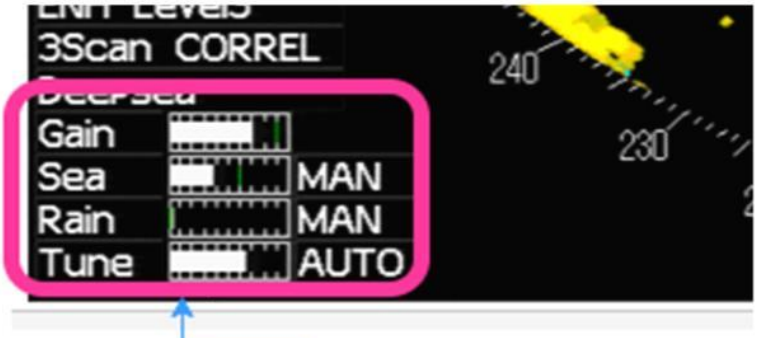



## ⟶*Sample Input Image*




***→Sample Image Section with mark-up (Highlighting data which needs to be extracted)***






Gain - 75% ( of Bar size )

Sea - 30 %, Mode - MAN

Rain - 0 %, Mode - MAN

Tune - 60 %, Mode - AUTO


HDG = 351.5

SPD = 4.0

SOG = 4.0

COG = 4.0

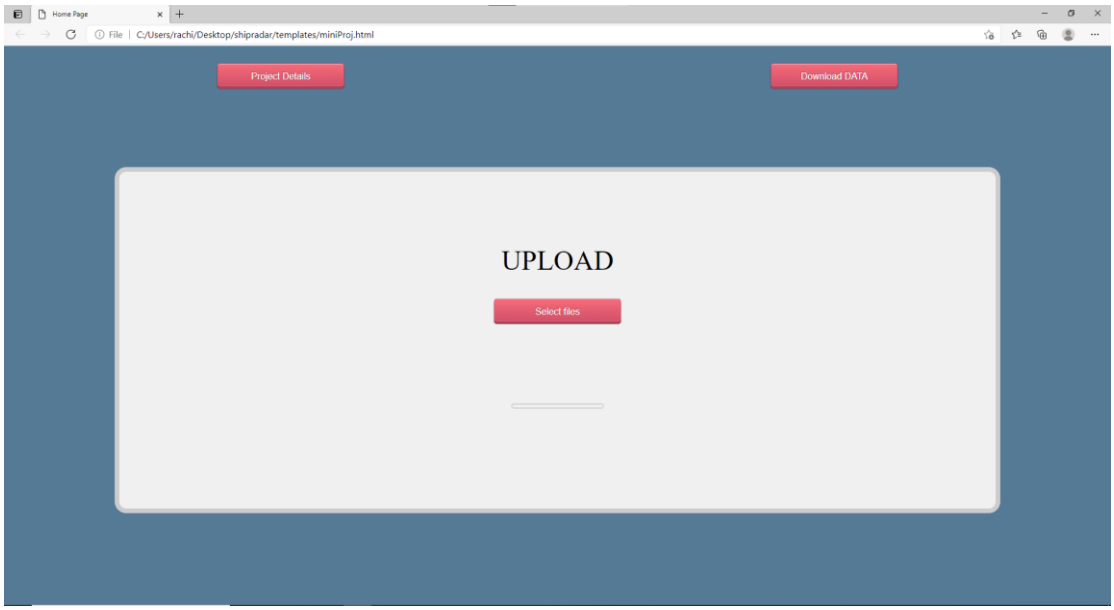
UTC=20 th Jan 2021 19:10 hrs

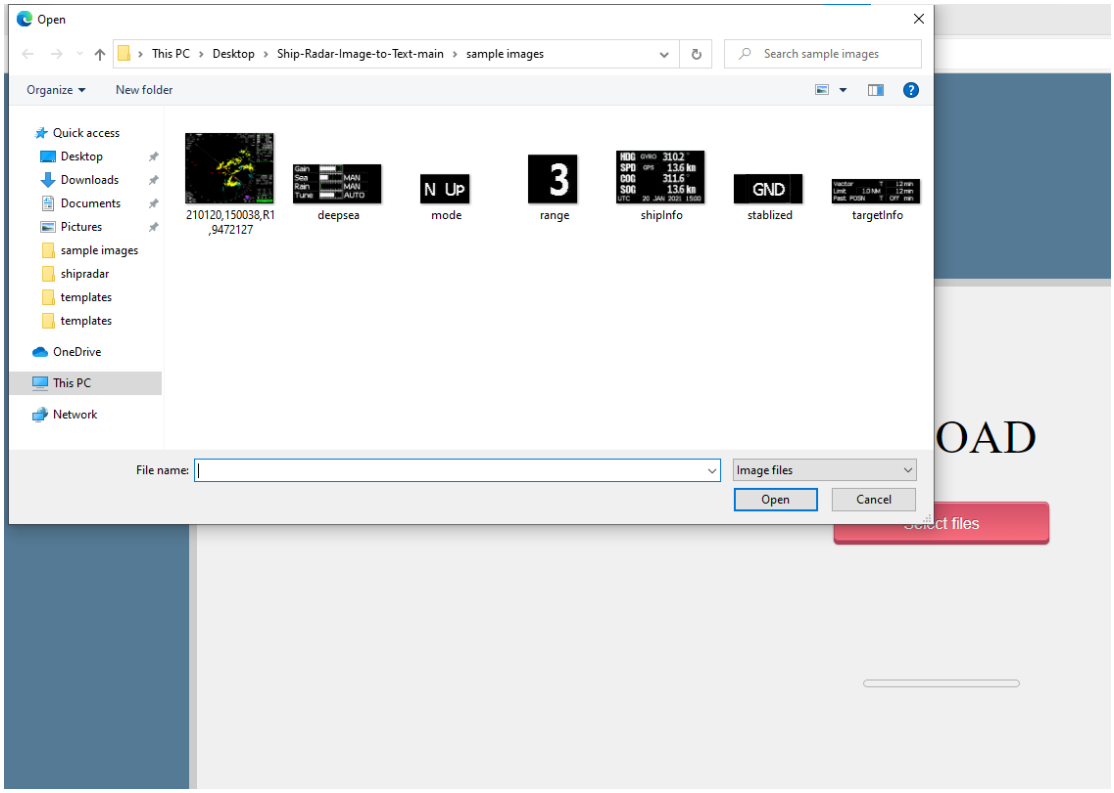

Vector = T, Time 12 Min

Past Posn= T, Time off

# RESULTS

The above idea was implemented successfully by using the aforementioned technology stack. The results are shown below: -




Open
This PC › Desktop › Ship-Radar-Image-to-Text-main › sample images
Search sample images
Organize
New folder
Quick access
Desktop
Downloads
Documents
Pictures
sample images
shipradar
templates
templates
OneDrive
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Network
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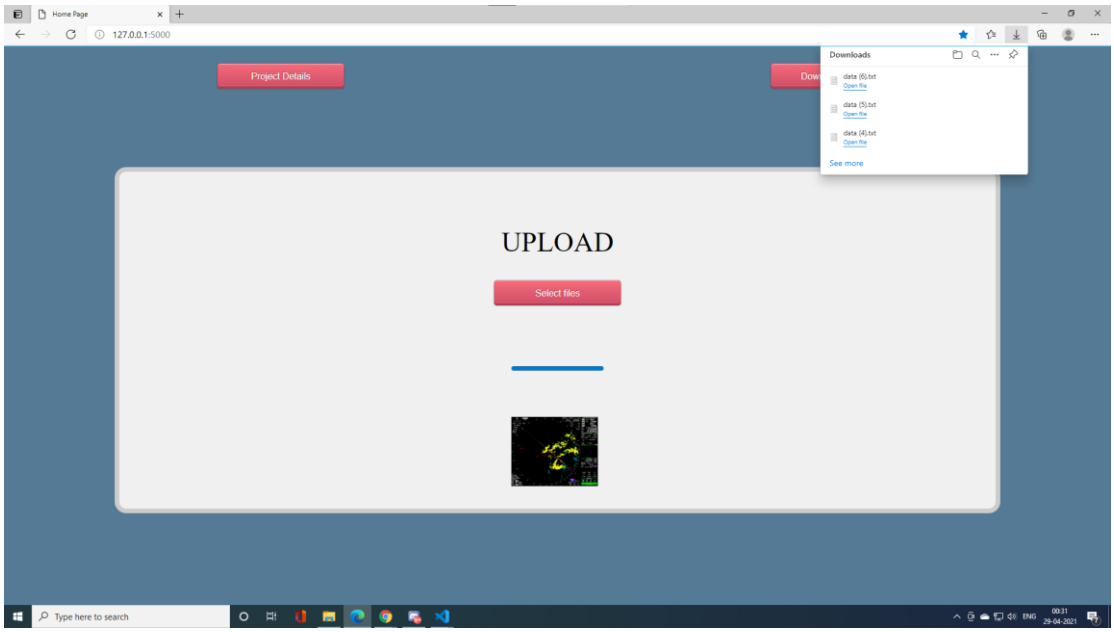
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Project Details
Downloads
data (6).txt
data (5).txt
data (4).txt
See more
UPLOAD
Select files
Type here to search

## OUTPUT: -


data - Notepad
File Edit Format View Help
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hdg 3102 gyro
136 spd kn
gps 3116 cog
136 sog kn
utc 20 jan
2021 1500
./static/deepsea.png
gain sea man
rain man auto
tune
./static/range.png
3
./static/stablized.png
gnd
./static/mode.png
n up