MUJEEB
Direct Analysis of Arabic Emergency Calls Using Natural Language Processing and Machine Learning

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ABSTRACT

The 911 system, currently relying on human call-takers, could benefit from Artificial Intelligence technology to enhance efficiency and accuracy in emergency response efforts. In this project, dataset was collected and prepared for building and evaluating various classification methods for classifying and prioritizing Arabic emergency calls and the logistic regression algorithm achieved the highest accuracy score (96.5%) with an average report processing time 38 seconds.

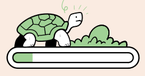
INTRODUCTION

911 calls are currently handled by trained operators, with modern emergency response systems like CAD systems providing location data and mapping.

CAD limitation :

Language limitation

Slow response time (45 seconds)



High chances of human error

OBJECTIVE

The primary goal of this project is to use Machine Learning techniques to classify, prioritize the accident report, and direct it to the nearest relevant authority.

Speed up response time → **Lower the error rate** → **Deal with language variation**

DATA COLLECTION

The data was collected using:

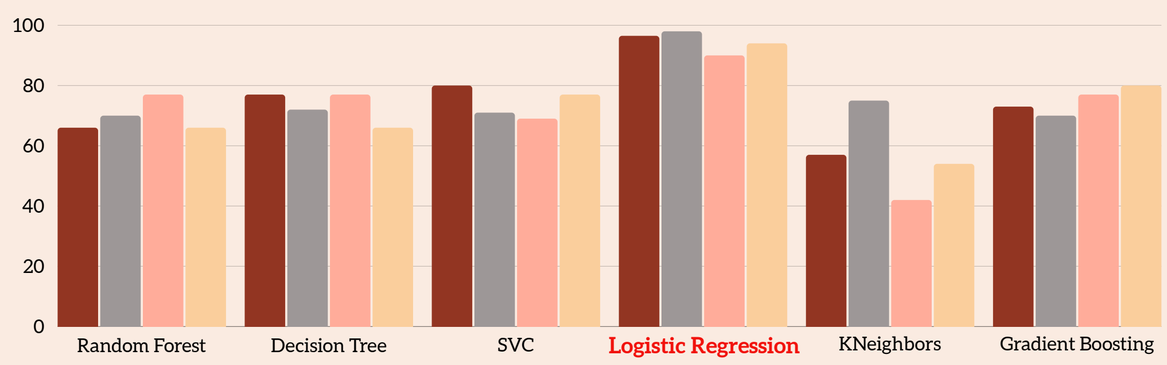
TWINT tool was used to collect accident reports from X application.

Google survey was used to collect voice accident reports from different people with different Arabic accents.

ChatGPT was used to generate simulations of accident reports.

RESULT

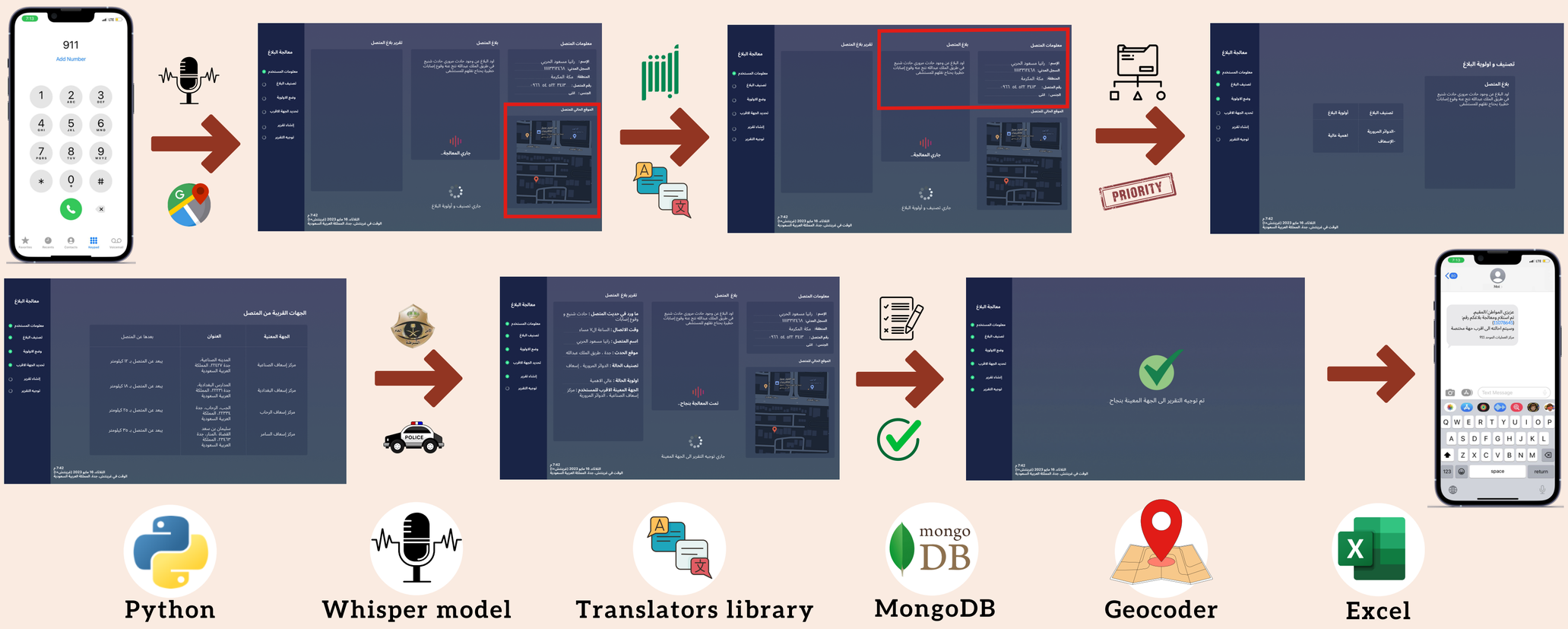
Best Machine Learning algorithm Logistic Regression with **96.5%** accuracy.



38 seconds

Average report processing time

PROTOTYPE



Python **Whisper model** **Translators library** **MongoDB** **Geocoder** **Excel**

FUTURE WORK

1. Deals with the variety of Arabic accents.
2. Recognize the tone and emotions of caller's speech.
3. People with special needs must have spatial services.
4. Handles fake and frequent accident reporting.
5. Dataset should include all types of calls.

CONCLUSION

Six Machine Learning algorithms were used to classify, prioritize emergency calls in Arabic using a dataset; the Logistic Regression algorithm yielded the highest accuracy score of 96.5%.

REFERENCES

CONTACT