Archives available at journals.mriindia.com

International Journal on Advanced Computer Engineering and Communication Technology

ISSN: 2278-5140
Volume 14 Issue 01, 2025

Automated Messaging Solutions: Feature based Classification of Farmers for Automatic Communication of Required Agriculture Products for Efficient Mass Messaging

Ruturaj Ramchandra Dharne[1], Pratiksha Nitin Bangar[2], Darshana Dilip Borole[3], Dr Suresh N Mali[4]

[1,2,3]U.G. Student, Department of Artificial Intelligence and Data Science, DYPCOEI, Varale, Maharashtra, India
[4]Principal of Dr D. Y. Patil College of Engineering and Innovation, Varale, Pune (SPPU), Maharashtra, India.

Peer Review Information

Submission: 21 Feb 2025
Revision: 25 March 2025
Acceptance: 30 April 2025

Keywords

Feature-Based Classification
Machine Learning
Farmers
Agricultural Products

Abstract

Now a today's fast-paced world, efficient communication is crucial. This project focuses on developing an automated communication system designed for farmers. The system integrates platforms like WhatsApp, email, and SMS to efficiently send personalized messages regarding
agricultural products. By leveraging automation, it ensures timely and accurate communication, enhancing the distribution and accessibility of essential farming supplies. Agricultural productivity and sustainability heavily depend on the timely and accurate dissemination of information and resources to farmers. However, the diverse and varying needs of farmers based on their location, crop types, and farming practices make traditional communication methods inefficient and resource intensive. This project proposes a feature
based. Classification System that leverages machine learning algorithms to automatically classify farmers based on key features such as farm size, crop type, geographical conditions, and socio-economic factors. Once classified, the system automates the communication of personalized agricultural product recommendations to farmers through SMS, mobile apps, or other channels.

INTRODUCTION

Automated Communication System Overview:

The project automates bulk communication via WhatsApp, email, and SMS. Using the Selenium
library, it sends pre-written messages and images through WhatsApp Web by reading phone numbers and message content from text files. It features two modes: one for text-only messages and another for messages with images. After a 30-second login window, it sends messages automatically—ideal for businesses and event organizers. For emails, the system uses Python's smtplib with Gmail's SMTP server. It personalizes and sends messages from a CSV file and supports attachments and scheduling. Additionally, it includes text message (SMS) functionality, allowing direct communication with users via mobile networks. These tools save time and effort in mass communication but must comply with WhatsApp's policies and anti-spam laws like GDPR and CAN-SPAM to avoid penalties.

LITERATURE SURVEY

Several studies have focused on enhancing communication through automation and assistive technologies. The 2022 paper *"A Wearable Sensor-Based Automatic Communicator for SpeechImpaired Individuals"* introduced a system using wearable sensors and machine learning algorithms to aid speech-impaired individuals, achieving 95% accuracy, fast response times, and high user comfort. Similarly, the 2021 study *"Gesture Recognition-Based Communication Aid for Non-Verbal Individuals"* used computer vision and gesture recognition to help non-verbal users communicate, delivering 92% accuracy and efficient processing. On the automation front, the 2022 study *"Automated Messaging Systems: A Comprehensive Study"* explored sending messages via multiple platforms using REST APIs, message queuing, and scheduler algorithms, highlighting high delivery accuracy and scalability. Another 2021 paper, *"Integrating Email, WhatsApp, and SMS for Automated Communication"*, focused on unifying communication platforms using API integration and OAuth authentication, resulting in smooth, secure, and responsive operations. The 2020 work *"Automated Birthday Wishes Using AI and Scheduling"* applied cron jobs and natural language processing to schedule personalized birthday wishes, ensuring timely and accurate message delivery.

METHODOLOGY

The project automates bulk communication using Python through **WhatsApp**, **email**, and **text messaging (SMS)**. **1. WhatsApp Automation**

Using **Selenium**, the system controls **WhatsApp Web** to send text messages and images. Phone numbers and messages are read from files. Two functions handle messaging: WatsappMessager (text only) and WatsappMsgImgSender (text + image). After a 30-second login window, the script automatically opens chats and sends messages. It's ideal for bulk messaging but must follow WhatsApp's terms of service.

2. Email Automation

With **smtplib** and Gmail's SMTP server, the system sends personalized emails with attachments. Emails are read from a CSV file, content from a text file. It supports scheduling and checks for internet connectivity before sending. This streamlines communication with large groups.

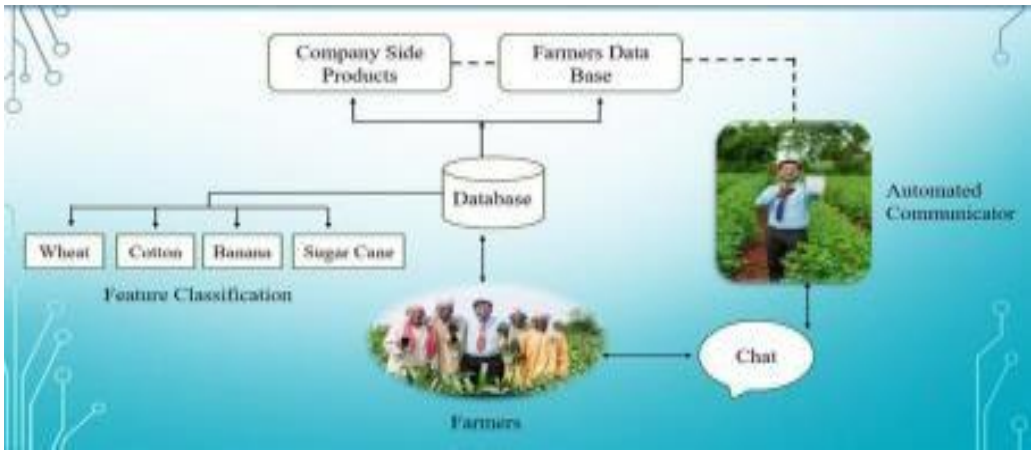
3. SMS Automation

For text message delivery, the system integrates with an SMS API (e.g., Twilio or Fast2SMS). It reads recipient numbers and message content from files and sends SMS messages programmatically. This feature is useful for reaching users without internet access.

System Architecture Diagram:

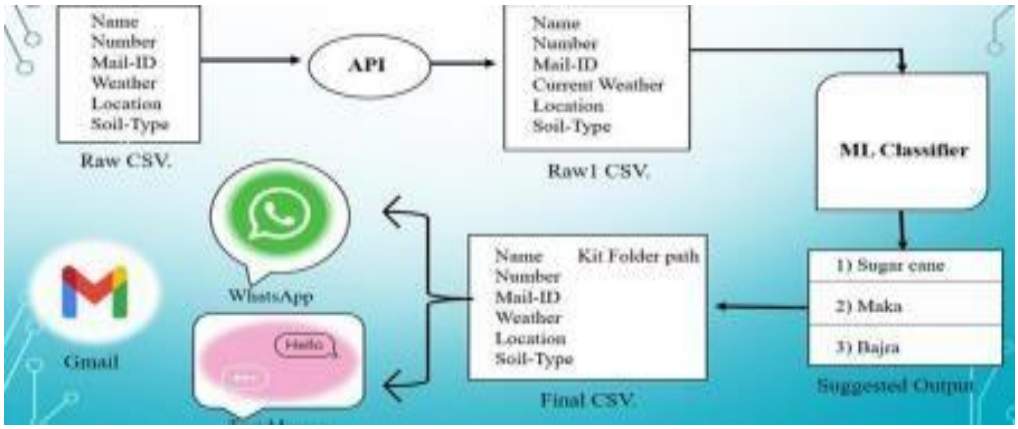
The flow:

1. Data Input (customer frequency).
2. Data Preprocessing (scaling and cleaning the dataset).
3. Model Training (SVM is trained on labeled data to classify products).
4. Prediction (new products are passed into the trained SVM model).
5. Diagnosis Output (the predicted products/needs)

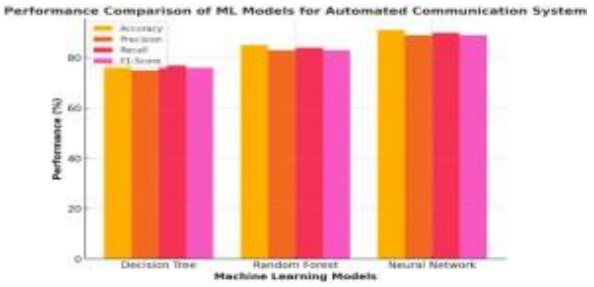


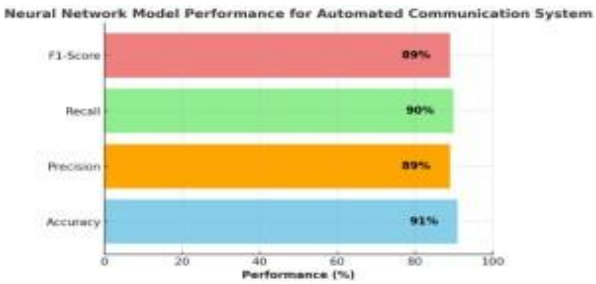
Frontend System Architecture

Backend System Architecture



EXPERIMENTAL RESULTS





|

CONCLUSION

The feature-based classification of farmers for automatic communication of required agricultural products through platforms like email, WhatsApp, and SMS offers significant benefits for modern agriculture. By leveraging real- time data and personalized recommendations, this system improves decision- making, enhances productivity, and supports resource optimization for farmers. Applications such as personalized product recommendations, access to market and government support help farmers navigate challenges and improve their crop yields and profitability.

References

Shubham Ghalme; Kanchan Shelke; Rutuja Kadam; Umakant Tupe 2023 International Conference on Sustainable Computing and Smart Systems (ICSCSS) (1), 213.

Shubham Ghalme; Kanchan Shelke; Rutuja Kadam; Umakant Tupe Automated email handling has become an essential aspect of managing emails in today's digital age. https://ieeexplore.ieee.org/document/10169850

Zhixin Yao [1 3], Chunjiang Zhao [1 2], Taihong Zhang Agricultural machinery automatic navigation technology Agricultural machinery automatic navigation technology - ScienceDirect Research Progress on Autonomous Operation Technology for Agricultural Equipment in Large Fields https://www.mdpi.com/20770472/14/9/1473

K. Schepers and T. K. Wetzels, "Email marketing automation: An experimental study of personalization and timing", Journal of Business Research, vol. 69, no. 9, pp. 3782-3789, 2016.

D. Ayling, "Personalized Email Marketing: Using Dynamic Content and Automation to Increase Relevance and Results", Journal of Direct Data and Digital Marketing Practice, vol. 12, no. 1, pp. 26-40, 2010. 7. A. Voigt and M.

R. Köhler, "Automating Email Campaigns: A Comparative Study of Email Marketing Tools", Proceedings of the International Conference on Information Technology and Business Intelligence, pp. 273-279, 2016.

S. Y. Chen and T. J. Yao, "Email Marketing Automation: A Review and Future Directions", Proceedings of the International Conference on Marketing Business and Trade, pp. 8993, 2017.

R. V. K. Reddy and P. R. P. Kumar, "Designing an Automated Email Response System for Business Communication", International Journal of Computer Applications, vol. 52, no. 13, pp. 29-36, 2012.

J. R. Smith and B. R. Simmonds, "Marketing Email Automation and Customer Engagement: A Study of User Perspectives", Proceedings of the European Conference on Marketing and Retailing, pp. 187-196, 2017. 11.

Alexander Perdomo Pantoja, Safwan Alomari, Daniel Lubelski,Ann Liu, Trevor DeMordaunt, Ali Bydon,
Timothy F. Witham, Nicholas Theodore, Implementation of an Automated Text Message– Based System for Tracking Patient-Reported Outcomes in Spine Surgery: An Overview of the Concept and Our Early Experience

Stanislav Dovgyi, Oleh Kopiika, Oleksii Kozlov & Alina Lytvynenko , Features of Message Transport Service in Automated Special-Purpose Systems Features of Message Transport Service in Automated Special-Purpose Systems | SpringerLink