Lokmanya Tilak Jankalyan Shikshan Sanstha's

Lokmanya Tilak College of Engineering

An Autonomous Institute Affiliated to University of Mumbai

(Approved by AICTE, Accredited by NAAC 'A' Grade & four programs by NBA)

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Department of Computer Engineering

Mini Project Presentation-I
T.E.(Sem – V)

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INBOXGENIE

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Presentation Outline

- Abstract
- Introduction
- Literature Survey
- Limitations of Existing system
- Problem Statement and Objectives
- Scope
- Proposed System
- References

ABSTRACT

InboxGenie is an AI-powered email dashboard web application designed to tackle the growing challenge of email overload and enhance productivity in digital communication. Unlike traditional inboxes that rely on basic spam filters and static categorization, InboxGenie integrates with Gmail through secure OAuth2 APIs and provides a centralized, intelligent inbox powered by Natural Language Processing (NLP), Machine Learning (ML), and Transformer-based deep learning models. Its core features include intent-based email classification and organization, advanced spam and noise reduction, automatic summarization and data extraction, and AI-assisted reply generation with tone adjustment. The system is built with a FastAPI backend, a Streamlit frontend, and a PostgreSQL/MySQL database, running inside Docker containers for scalability and deployment. By combining contextual understanding, personalization, and automation, InboxGenie offers users a smarter, cleaner, and more adaptive email experience, going beyond the limitations of existing inbox systems.

INTRODUCTION

Email has become an essential tool for both personal and professional communication, but the rapid growth of promotional messages, spam, and lengthy conversations has resulted in information overload. While existing inboxes such as Gmail provide basic categorization and spam filtering, they lack the ability to deliver personalized, context-aware management of emails. Users often struggle to separate critical messages from less important ones, waste time organizing their inbox, and face difficulty drafting replies in the right tone. To address these gaps, InboxGenie is introduced as an AI-powered email dashboard web application that connects to Gmail through secure APIs and provides a centralized intelligent inbox. By using Natural Language Processing, Machine Learning, and Transformer-based models, it offers intent-based classification, summarization, spam reduction, and AI-assisted reply generation with tone adjustment. With its modern web-based interface built using Streamlit and a robust FastAPI backend with database integration, InboxGenie aims to transform email management into a smarter, cleaner, and more efficient experience.

LITERATURE SURVEY

Sr. No	Authors	Title of the paper & year of publish (Old to recent)	Major contributions/ Methods Used	Gaps
1	I,Androutsopoulos, K.V. Chandrinos	An experimental comparison of Naive Bayesian and keyword-based anti-spam filtering with personal e-mail messages, 2000	Introduced Naïve Bayes classification for spam detection; demonstrated superior performance over simple keyword filters.	Focused only on spam; no handling of phishing, graymail, or productivity issues.
2	D. Etzold	Improving spam filtering by combining Naïve Bayes with simple k-nearest neighbor searches, 2003	Enhanced spam filtering by combining Naïve Bayes with k-NN search to improve accuracy.	Still limited to spam filtering; lacked adaptability to evolving threats or user-focused features.

LITERATURE SURVEY

Sr. No	Authors	Title of the paper & year of publish (Old to recent)	Major contributions/ Methods Used	Gaps
3	S. Zhang, M. Li, H. Li, M. Huang	EmailSum: Abstractive email thread summarization, 2021	Developed transformer-based abstractive summarization for long email threads	Only addressed summarization; did not integrate with spam detection or prioritization systems.
4	A. Kashapov, E. Pyanova, V. Myasnikov	Email summarization to assist users in phishing identification, 2022	Proposed security-driven summarization highlighting phishing cues in emails.	Narrow focus on phishing detection; lacked integration of productivity, tone control, or spam segregation.

LIMITATIONS OF EXISTING SYTEM

Despite significant advances in email technology, current platforms such as Gmail, Outlook, and Yahoo Mail continue to exhibit several inherent limitations that affect efficiency, user experience, and security.

These shortcomings are summarized as follows:

- Reliance on static, rule-based filters.
- Poor contextual understanding of emails.
- Ineffective against advanced spam/phishing.
- Heavy manual sorting required.
- Limited personalization / intelligent assistance.

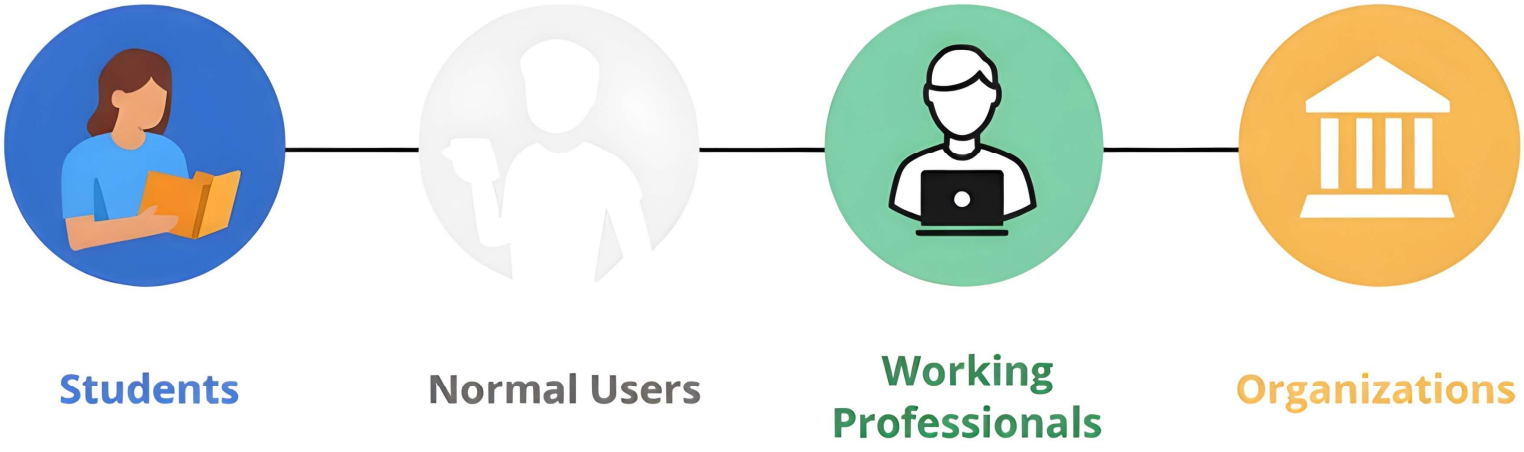
PROBLEM STATEMENT & OBJECTIVES

Problem Statement: Managing emails efficiently is challenging as inboxes often become cluttered with promotions, spam, and important messages grouped together. Existing email platforms provide basic AI features like rule-based filters and general categorization, but these remain limited in contextual understanding. As a result, users spend extra time manually sorting, risk missing critical emails, and lack personalized assistance for composing professional or context-appropriate replies.

Objectives:

1. Smart Email Classification - Organize emails by intent, category, and priority using advanced NLP and ML.
2. Enhanced Spam Filtering - Detect and separate spam, phishing, and graymail with greater accuracy.
3. Automated Inbox Management - Apply custom user rules to auto-clean and organize emails.
4. AI-Powered Tone Changer - Assist users in drafting replies with formal, casual, or friendly tones.
5. Summarization & Extraction - Provide concise summaries and highlight key details from long email threads.

SCOPE



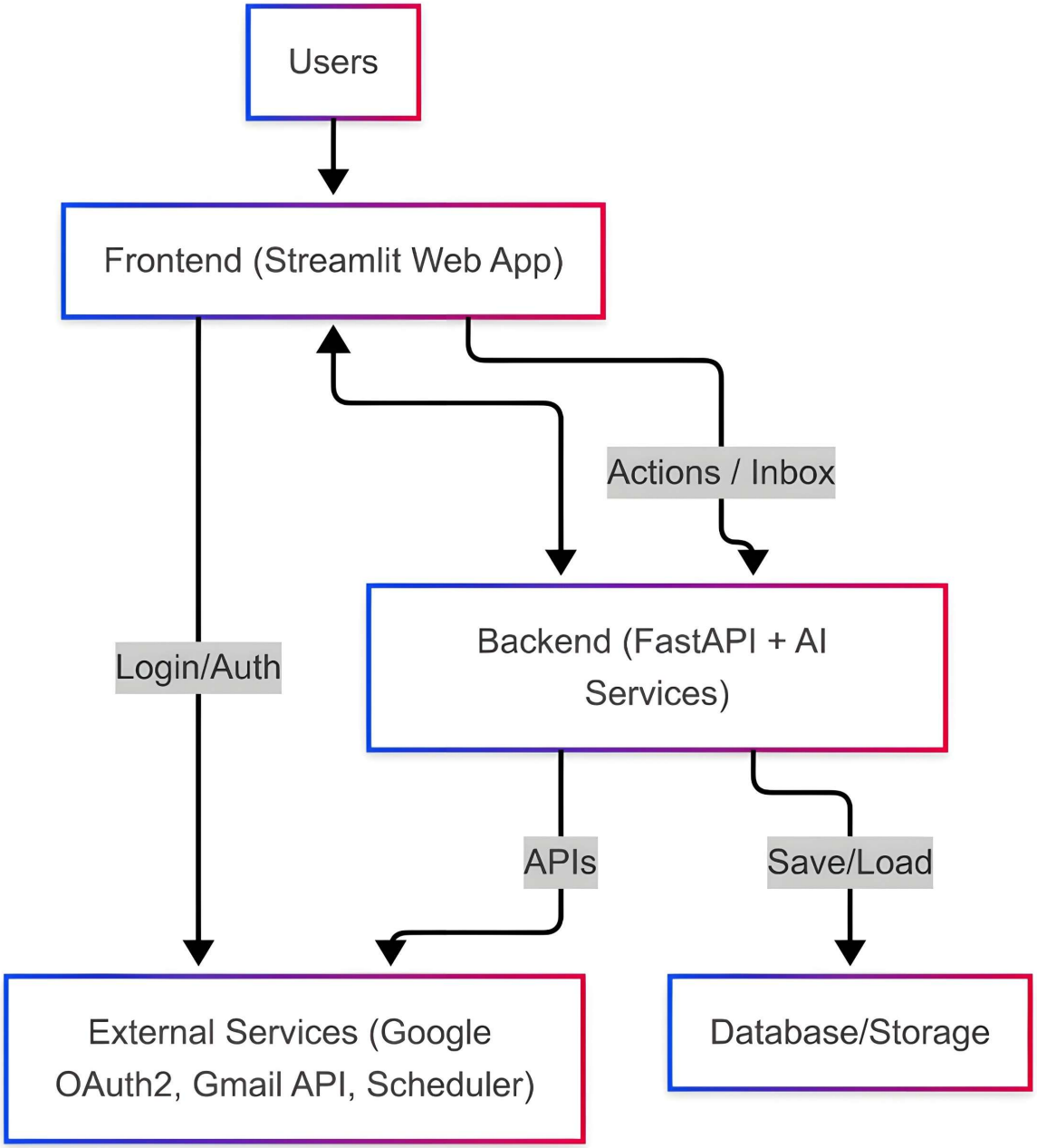
- ✓ **Students**
  Organized inbox, quick summaries of key mails, reduced distractions.

- ✓ **Normal Users**
  Cleaner inbox, better spam protection, faster replies, and stress-free email use.

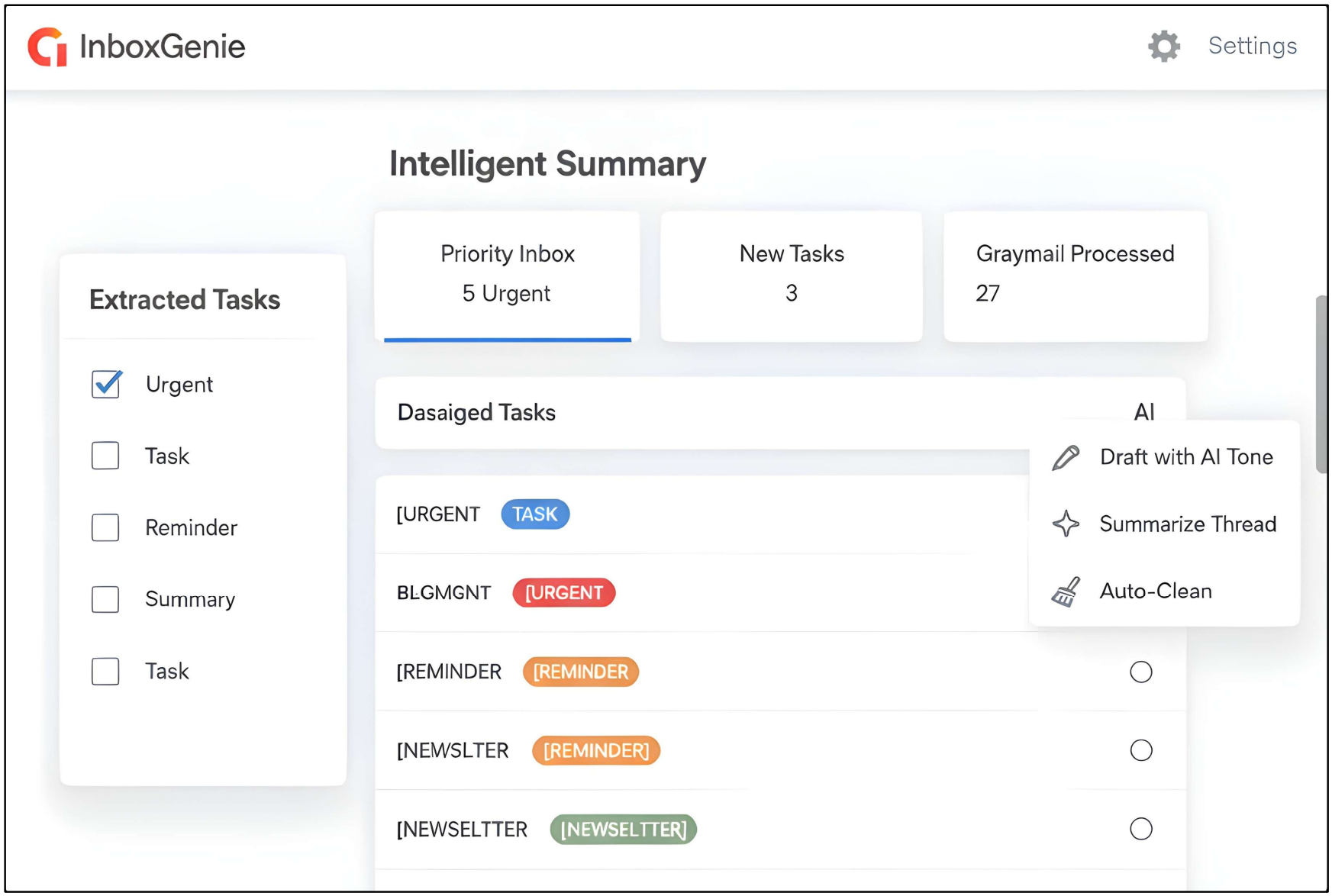
- ✓ **Working Professionals**
  Time-saving classification, auto-prioritization, tone adjustment for replies.

- ✓ **Organizations**
  Productivity boost through spam control, structured communication, AI-assisted workflows.

PROPOSED SYSTEM



PROPOSED SYSTEM



Sample UI generated by AI

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Thank You!