Idea Number -2 AI-Powered Citizen Grievance Redressal System

TeamName:- SARTHI

Team Introduction

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Idea Overview – JanSaarthi: AI-Powered Grievance Redressal with Empathy

The Problem

- India's helplines like UP CM Helpline 1076 receive over 25,000+ complaints per day.
- Many are emotional, urgent, or repetitive — but current systems treat all equally.
- Citizens often tweet "#1076 no action yet" or post videos, but these are ignored by formal systems.
- Lack of emotional awareness leads to delayed redressal, frustration, and even protests.

Why It Matters

- A delayed grievance in public services can quickly become a societal issue.
- Repeated neglect → public outrage → media damage → loss of trust in government.
- 70%+ complaints are unprioritized due to rigid, rule-based systems.

Our Solution – JanSaarthi

An emotion-aware, multimodal, AI-powered system that understands:

- What the complaint is
- How the citizen feels
- What will happen if it's ignored

Includes a Social Media Intelligence Layer (SMIL) that:

- Captures complaints from X (Twitter), Insta, etc.
- Scores risk via Societal Ripple Score (SRS)
- Auto-registers high-risk issues without citizen needing to fill a form

The Value It Delivers

- Builds a truly responsive & citizen-first system
- Reduces human bias and admin overload
- Captures missed signals from social platforms
- Prioritizes with empathy, not just logic

Existing Systems	JanSentient
Text-only forms	Multimodal: text, voice, image, social media
Manual priority	Emotion-aware AI + SRS scoring
Ignores public frustration	SMIL listens to social signals
Department-first routing	Citizen-first follow-up with JanSaathi
No feedback to citizen	Transparent, personalized updates

Solution Outline (2-3 slides)

Components:

Multimodal Intake Module

Accepts: Voice (Whisper), Text, Image (CLIP/YOLOv8), Video

Emotion & Escalation Detector

IBM Watson NLU / Emoberta-based tone & urgency analyzer

Societal Ripple Score (SRS) Engine

Assigns 0–100 score based on emotion, escalation, recurrence

Smart Routing Engine

Department classifier + Load balancer

Admin Dashboard

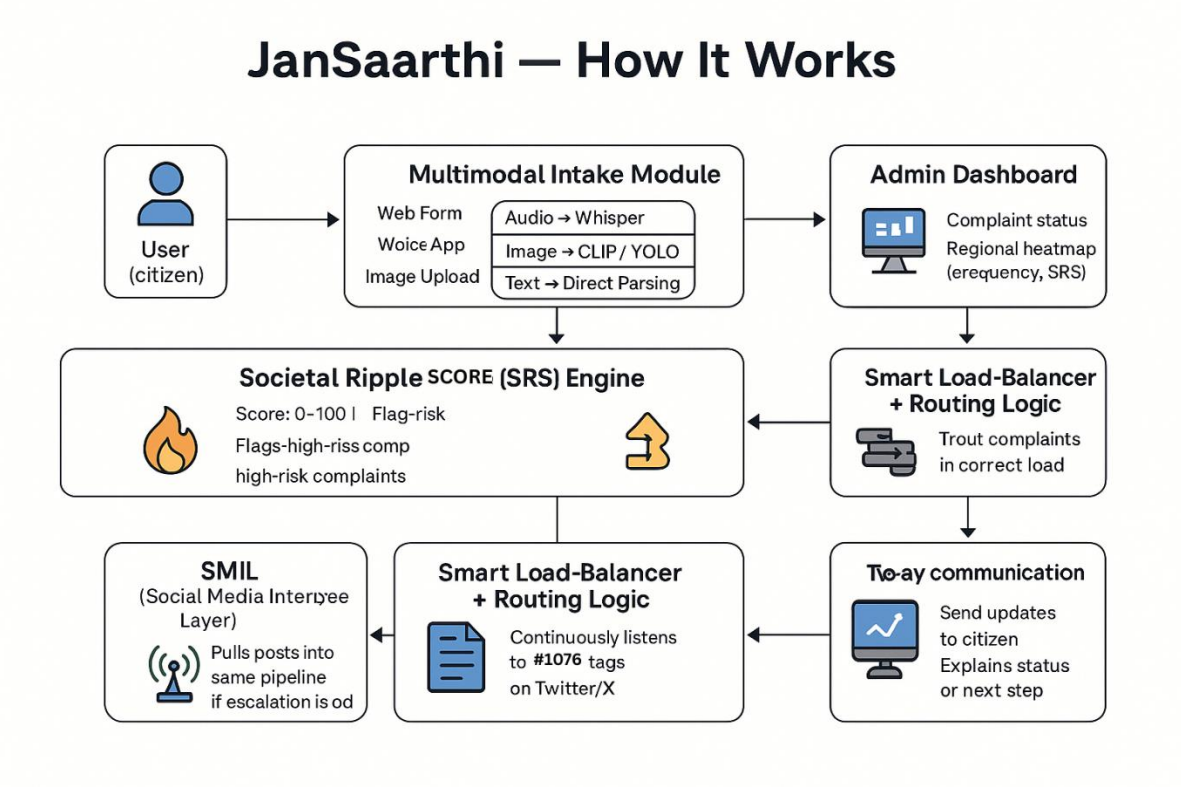
Visual insights: complaint heatmap, risk levels, department load

JanSaathi Copilot

Chatbot that communicates with citizens via WhatsApp/SMS

SMIL (Social Media Intelligence Layer)

Scans public posts (e.g., #1076 on X) and converts them into complaints



Use of AI

How AI Solves the Problem:

JanSaarthi uses emotion-aware AI models to not just understand “what” is being said, but “how intensely” and “with what intent”. Each complaint (whether voice, text, image or tweet) is routed through an LLM pipeline that performs:

- Sentiment classification
- Emotion detection (anger, frustration, sarcasm, helplessness)
- Escalation detection ("media", "protest", "ignored")
- Region-sensitive context tagging
- Societal Ripple Score (SRS) calculation

AI Models Used:

Task	Model / Tool Used
Sentiment & Emotion Analysis	IBM Watson NLU + Emoberta + Zero-shot LLM
Voice Transcription	Whisper (open-source)
Image Complaint Processing	CLIP / YOLOv8
Escalation Keyword Detection	spaCy + Prompted LLM (regex + intent)
Summarization + Action Prompt	GPT-4-turbo via LangChain + prompt design
Prioritization & Scoring	Custom SRS ML model (sklearn)
Social Media Monitoring	IBM Discovery (or X/Twitter API + prompt inference)

Future possibilities

Enhancing JanSaarthi Beyond the Pilot

- Sentiment Heatmaps by District
- Live dashboards showing regional frustration or escalation risk
- Helps DM offices prioritize field visits or campaigns

Policy Suggestion Engine

- AI analyzes patterns in repeated complaints
- Suggests policy tweaks or department reforms (e.g. garbage delay → sanitation budget reallocation)

Multilingual Expansion

- Hindi, Bhojpuri, Awadhi, Bundelkhandi voice/text support
- Accessible to rural and semi-literate populations

Citizen Escalation Tracker

- JanSaathi bot suggests when & how to escalate (RTI, public grievance portal, DM office)

Integration with National Systems

- Connect with 112 (emergency), Women Helpline, Swachh Bharat dashboard

Open Feedback Leaderboard

- Track which departments respond fastest
- Builds public trust and departmental accountability

Crowdsource Civic Verification

- Users can upvote/downvote accuracy of complaints
- Validates before resource dispatch

Anything Else

Optional Add-ons We're Ready to Discuss:

- Citizen Privacy Layer: NER-based anonymization before AI processing
- Multilingual Voice Support: Extending to 12+ Indian regional languages
- Offline Mode for Rural Kiosks: For areas with poor connectivity
- Feedback Loop Learning: SRS re-training using real citizen feedback
- Integration with Jan Dhan + DBT schemes (for grievance-linked service issues)

Social Media Intelligence Layer (SMIL)

The Missed Reality:
30%+ complaints go on social media, never reaching official portals
Tags like #1076, #UPGovt are ignored unless viral"

Our Layered Solution – SMIL:
Continuously scans social media (X, Insta) for complaints via:
Hashtags, mentions, location tags (GeoTagged posts)
Escalation keywords: "strike", "ignored", "media", "RT please"
Emotion detection: anger, sarcasm, helplessness
Calculates Societal Ripple Score (SRS)
If SRS > threshold → auto-registers complaint
Sends citizen an auto-DM: "We heard you. Ref ID: XXXXXX"

Key Impact:
Captures complaints never filed on official apps
Reduces PR crisis risk by early intervention
Makes 1076 "feel human" — govt listens where citizens vent

Function	Tools Used
Social Listening	Twitter API, IBM Watson Discovery
Tone & Escalation Analysis	IBM NLU, OpenAI GPT-4 Emoberta
Ripple Scoring Engine	Custom ML + LangChain
Response + Logging	Firebase + FastAPI + Twilio

Deployment Architecture

Scalable & Modular Deployment Model

Frontend:

- JanSaathi Chatbot (WhatsApp via Twilio API)
- Web Dashboard (React/Streamlit for Admins)

Backend & Orchestration:

- FastAPI (Python) for microservice APIs
- LangChain for LLM chaining & prompt execution
- Task queue (Celery or IBM Cloud Functions)

AI/NLP Layer:

- GPT-4 or IBM Watsonx.ai for summarization & classification
- Emoberta + IBM Watson NLU for emotion & tone detection
- Societal Ripple Score engine (custom ML model)

Storage & Infra:

- Firebase or IBM Cloud Object Storage for complaint media
- IBM Event Streams (optional) for event-driven escalation
- MongoDB/Firebase for complaint metadata

Hosting Options:

- IBM Cloud (Preferred: aligns with hackathon sponsor)
- OR any cloud (AWS, Azure, GCP, ONDC-compatible infra)
- Can run on edge device (Raspberry Pi) for local kiosks

Cost vs Benefits for Realization (1-2 slides)

Effort (6 Weeks, Team of 4)

- Intake + Emotion Classifier: 10–12 days
- SRS + Routing + Dashboard: 10–12 days
- JanSaathi + SMIL Layer: 8–10 days
- Testing + Optimization: 5 days

Subscriptions (for MVP)

- OpenAI GPT-4: ~$15/month
- IBM Watson STT/NLU: Free Tier
- Firebase (Free), Twilio: ₹0.5/message approx

Dependencies

- APIs: OpenAI, IBM, Twitter/X, Twilio
- Tools: LangChain, Whisper, FastAPI, React
- Infra: Firebase / IBM Cloud Object Storage

ROI

- 30% faster resolution of critical complaints
- 30% more grievances captured via SMIL
- Higher trust, less PR risk, scalable for national use