AI for Bharat Hackathon

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Problem Statement : Clinical Notes Summarization Assistant

Brief about the Idea: Clinical Summarization Assistant

- Summarizes long clinical notes into concise, structured outputs for handoffs and rounds.

- Reduces clinician cognitive load and review time using synthetic/public medical data.

- Enforces responsible AI: no diagnosis, no treatment, factual fidelity, traceability, uncertainty.

- Uses AWS Bedrock, Lambda, API Gateway, and S3 for scalable workflow automation.

How different is it from existing ideas?

- Focuses on workflow-grade clinical handoffs vs. generic medical summarization tools.

- Enforces strict safety constraints (no diagnosis/treatment), aligned with real hospital responsibility boundaries.

- Produces structured summaries with required clinical sections, not just free-text abstraction.

- Adds red-flag detection, uncertainty handling, and traceability to source information.

How will it solve the problem?
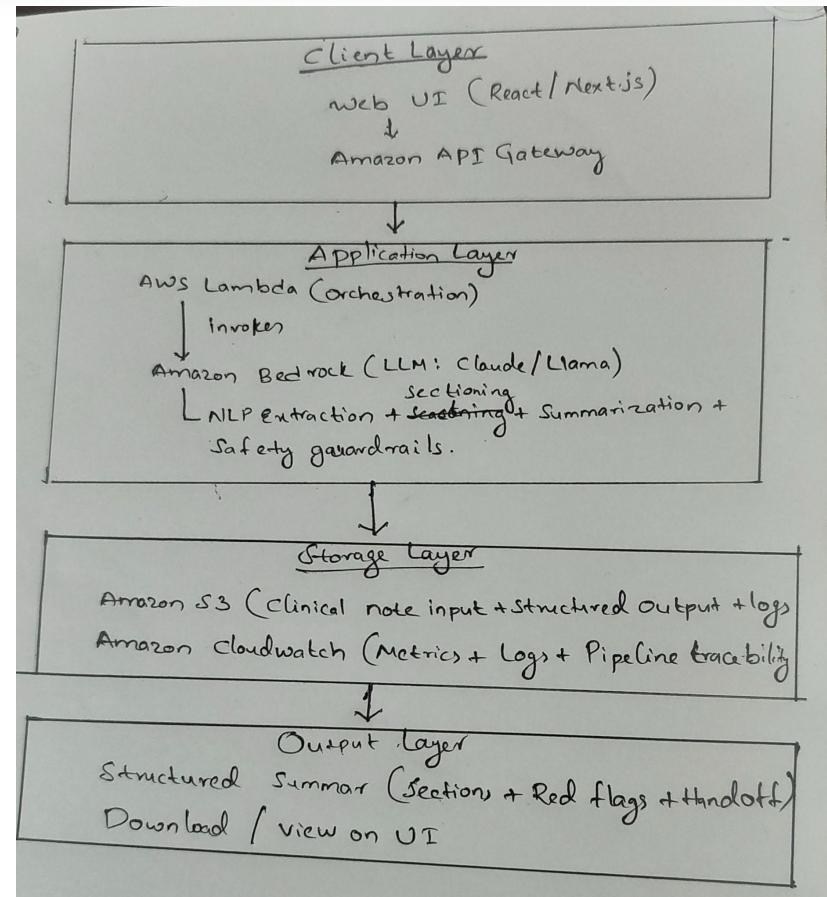
- Converts long free-text notes into actionable summaries optimized for rounds and handoffs.

- Reduces cognitive load and documentation review time for clinicians under time pressure.

- Improves information transfer and situational awareness across multidisciplinary care teams.

- Enables reliable, repeatable, and auditable summaries using synthetic/public datasets.

USP of the Clinical Summarization Assistant (Unique Value Proposition)
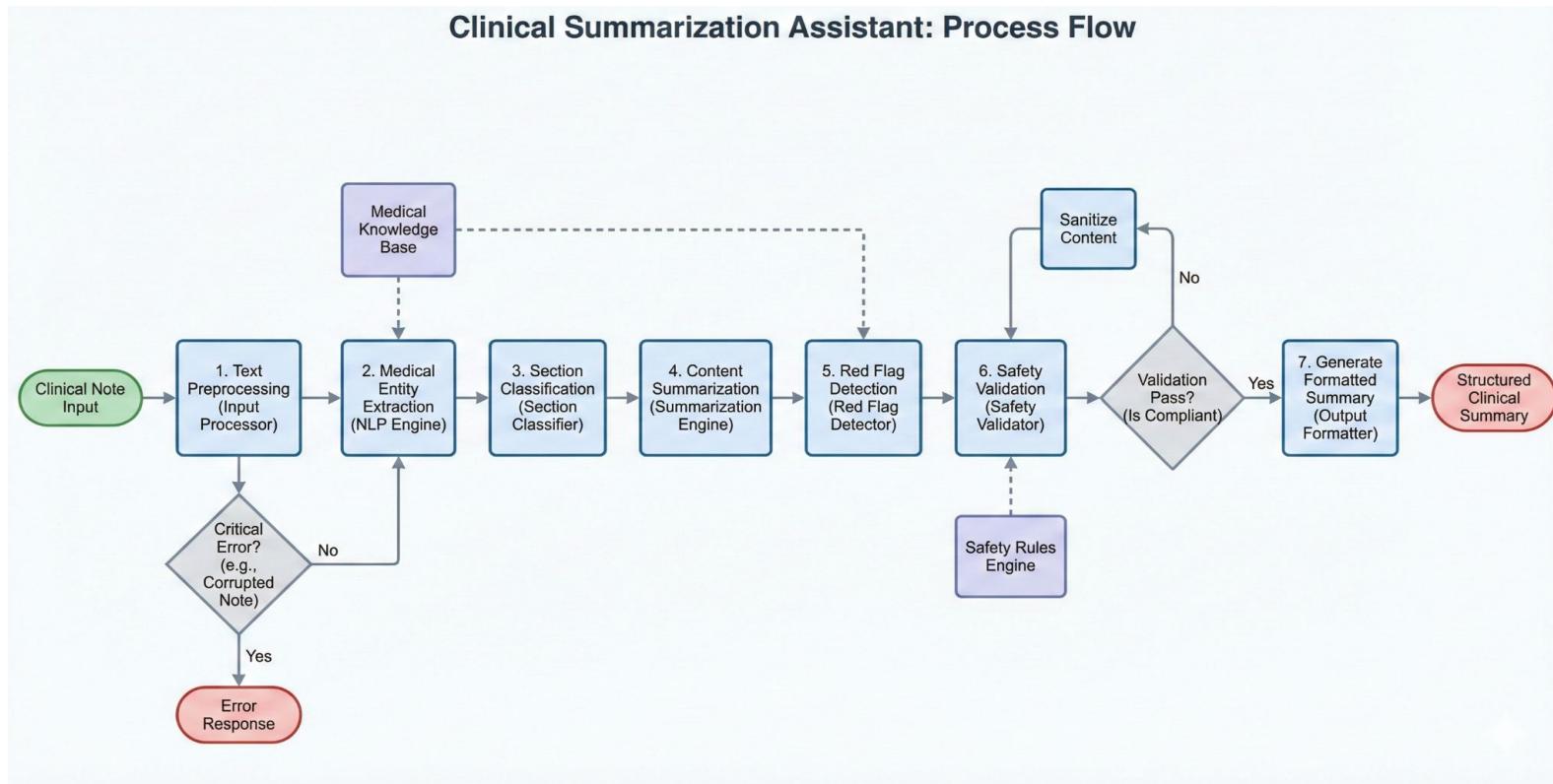
- Purpose-built for clinical workflow automation, not patient-facing advice or diagnostics.

- Responsible-by-design: includes safety filters, compliance constraints, and ambiguity preservation.

- Structured outputs allow integration with EHRs, research tools, and downstream automation.

- Flexible AWS architecture (Bedrock + Lambda + S3 + optional Kendra) enables scalable deployment.

List of features offered by the **Clinical Summarization Assistant**

- Converts long clinical notes into structured, handoff summaries.
- Highlights red flags, pending actions, and uncertainties for situational awareness.
- Enforces safety constraints: no diagnosis/treatment, source traceability.
- Scales via AWS (Bedrock + Lambda + S3) with logging and audit capabilities.

Process flow diagram of Clinical Summarization Assistant

Clinical Summarization Assistant: Process Flow

Wireframes of Clinical Summarization Assistant

Panel 1

Clinical Summarization Assistant

Unstructured Clinical Note Input
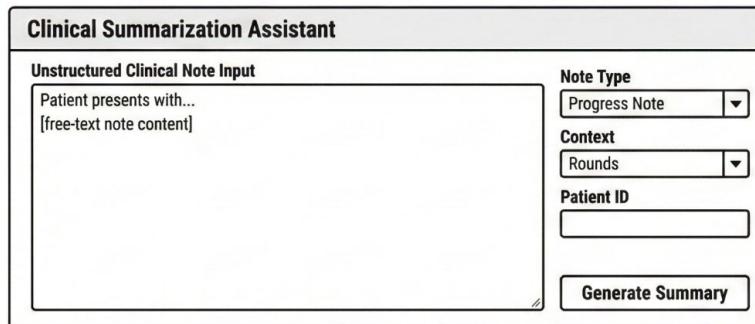
Patient presents with...
[free-text note content]

Note Type
Progress Note ▼

Context
Rounds ▼

Patient ID

[Generate Summary]

Panel 1: Clinical Note Input

Panel 2

Clinical Summarization Assistant

Unstructured Clinical Note Input

Patient presents with...
[free-text note content]

Processing Status: 65%

Extracting entities... Done
Categorizing sections... Done
Detecting red flags... In progress
Validating safety constraints... Pending
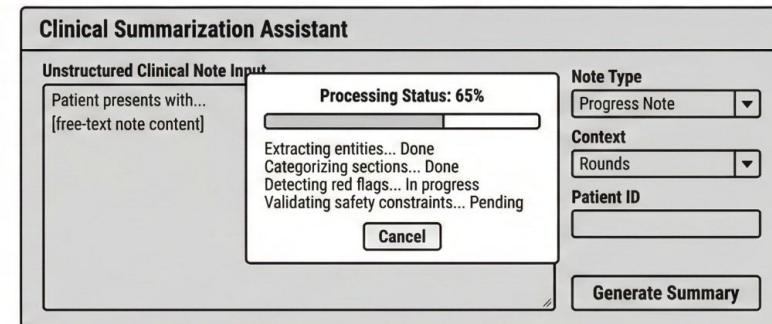
[Cancel]

Note Type
Progress Note ▼

Context
Rounds ▼

Patient ID

[Generate Summary]

Panel 2: Processing & Validation

Panel 3

Clinical Summarization Assistant

Structured Summary - Patient ID: 12345

Chief Complaint —
• Chest pain
• Shortness of breath

History of Present Illness —
Lorem presents dolor sit amet, consectetur
adipiscing elit, sed do elusmod tempor history of
medicant and dang non-ma present alique. Hovover
massit consuased anoil omarphely saininated
convistency and compummacuna presentinatun
rehals. No comeitation e lnowed uitle t:iarga poin but
at-me sunmle excelt intem set not reel in the heering
of scorkectum.
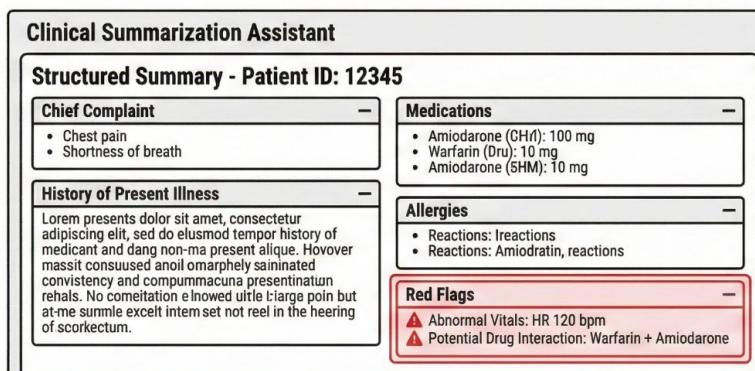
Medications —
• Amiodarone (CHィl): 100 mg
• Warfarin (Dru): 10 mg
• Amiodarone (5HM): 10 mg

Allergies —
• Reactions: Ireactions
• Reactions: Amiodratin, reactions

Red Flags —
⚠ Abnormal Vitals: HR 120 bpm
⚠ Potential Drug Interaction: Warfarin + Amiodarone

Panel 3: Structured Clinical Summary

Panel 4

Clinical Summarization Assistant

Handoff Summary
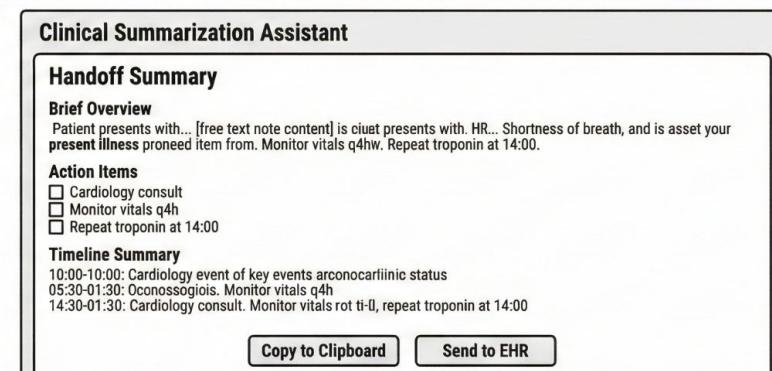
Brief Overview
Patient presents with... [free text note content] is ciuet presents with. HR... Shortness of breath, and is asset your
present illness proneed item from. Monitor vitals q4hw. Repeat troponin at 14:00.

Action Items
☐ Cardiology consult
☐ Monitor vitals q4h
☐ Repeat troponin at 14:00

Timeline Summary
10:00-10:00: Cardiology event of key events arconocarliinic status
05:30-01:30: Oconossogiois. Monitor vitals q4h
14:30-01:30: Cardiology consult. Monitor vitals rot ti-0, repeat troponin at 14:00
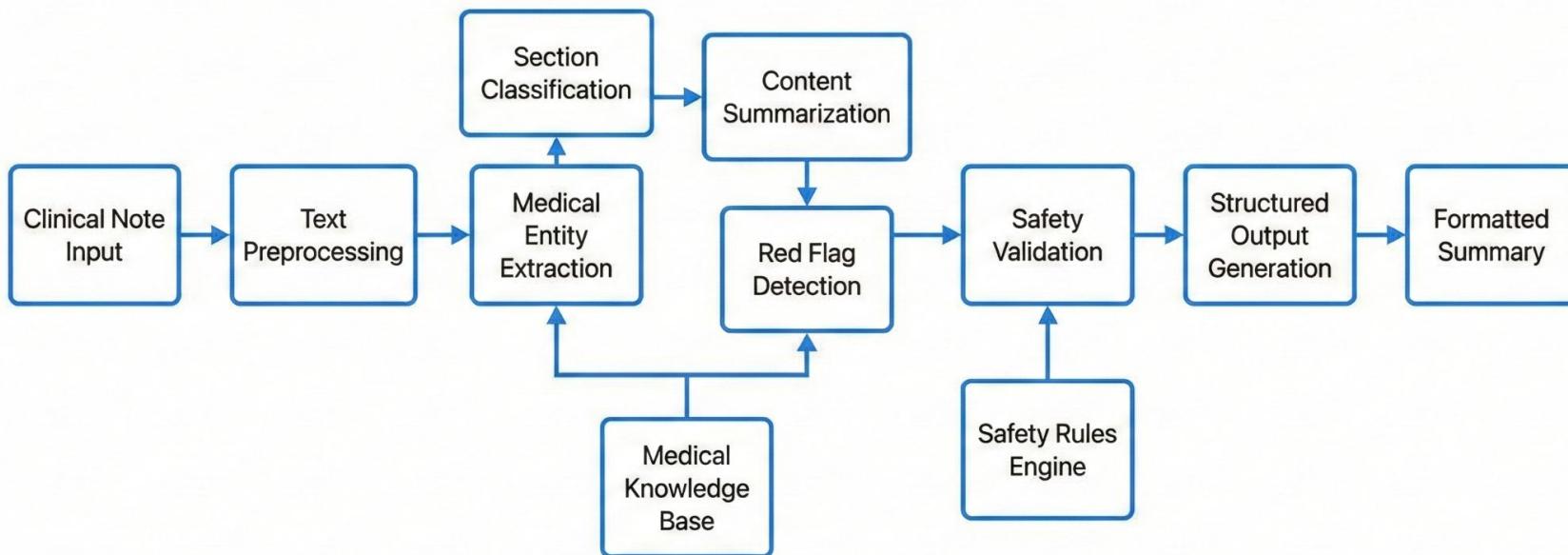
[Copy to Clipboard]   [Send to EHR]

Panel 4: Handoff View & Actions

Architecture diagram:

Clinical Summarization Assistant: System Architecture

Technologies to be used in the solution:

AI / NLP

- Amazon Bedrock (Claude / Llama) for summarization
- Optional retrieval: Amazon Kendra / OpenSearch

Backend & Orchestration

- AWS Lambda for pipeline orchestration
- Amazon API Gateway for service interface

Storage & Observability

- Amazon S3 for input/output storage
- Amazon CloudWatch for logging, auditing, and monitoring

Technologies to be used in the solution:

Frontend

- React / Next.js for structured clinical summary UI

Data & Medical Context

- Synthetic/Public clinical notes (e.g., MIMIC/i2b2)
- Optional ontologies: SNOMED CT / ICD-10 / RxNorm

Security & Compliance (Optional Enhancements)

- AWS IAM for secure access control
- AWS Amplify for deployment and scaling (optional)