



# AI-Powered Clinical Symptom Intelligence Platform

CODE PIRATES (ID:031)

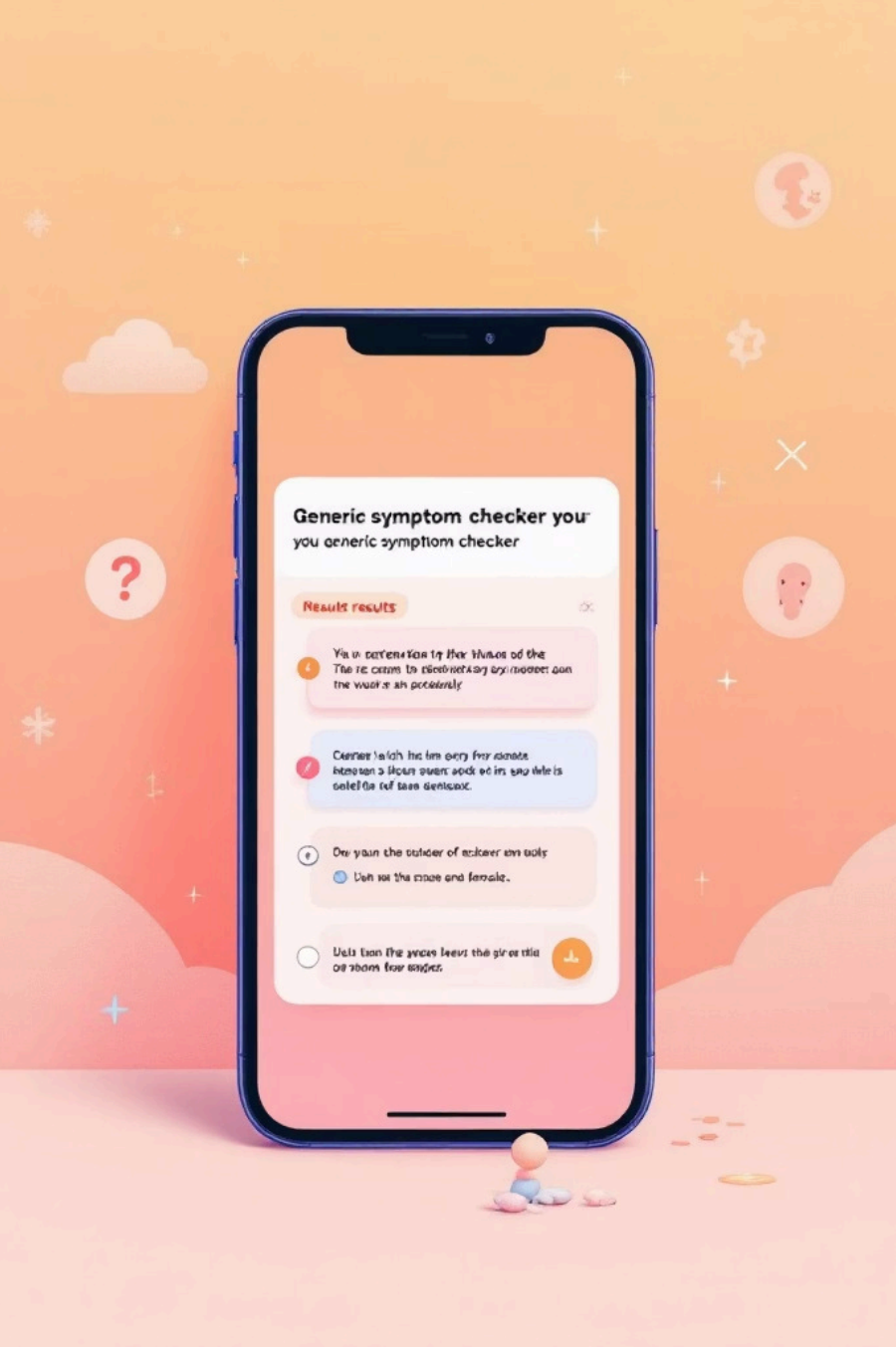
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## Problem

- Unstructured patient symptom descriptions — free text, variable quality
- Overloaded systems — long waits and clinician cognitive load
- Manual triage inefficiencies — inconsistent prioritisation
- Risk of missed red-flag symptoms with adverse outcomes



# Why Existing Solutions Fall Short



## Generic outputs

Consumer-focused answers, not clinician-grade



## No structured clinical output

Hard to integrate into workflows



## No prioritisation

Doesn't highlight urgent cases



## Opaque AI

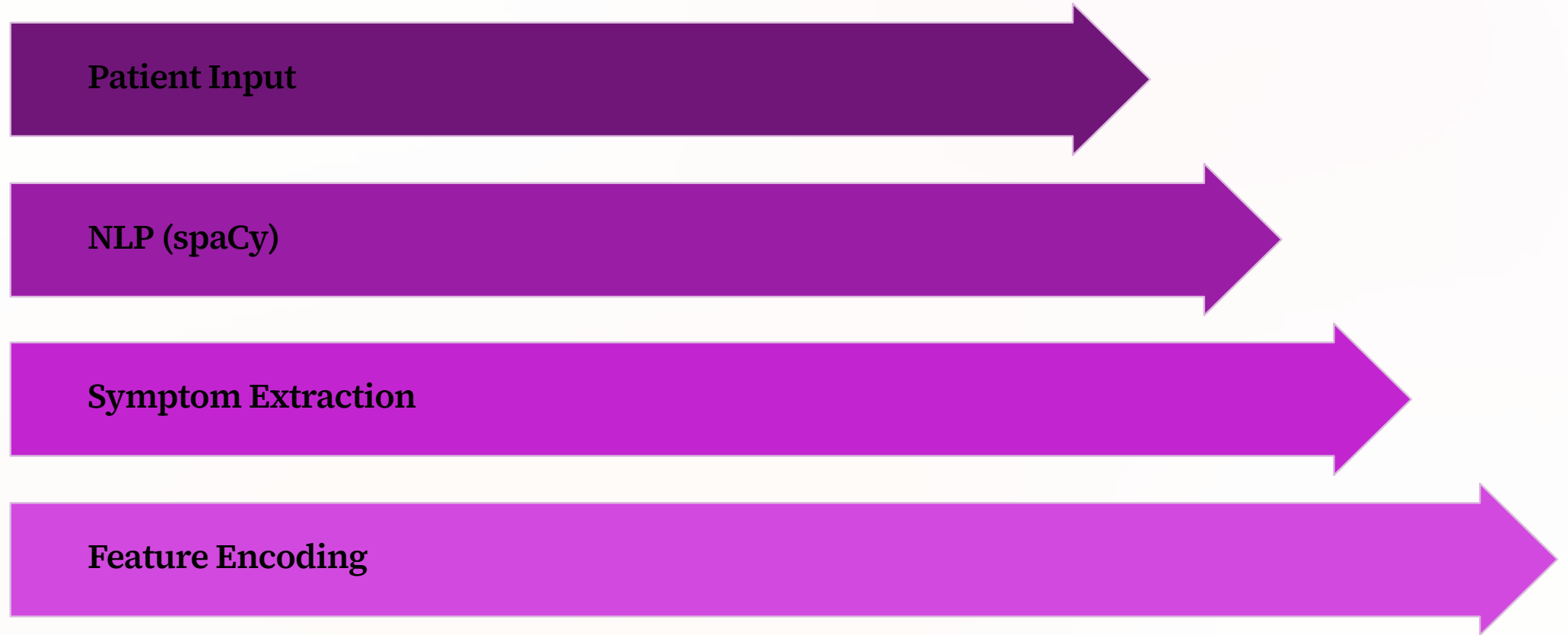
Limited explainability for clinicians



## Our Solution

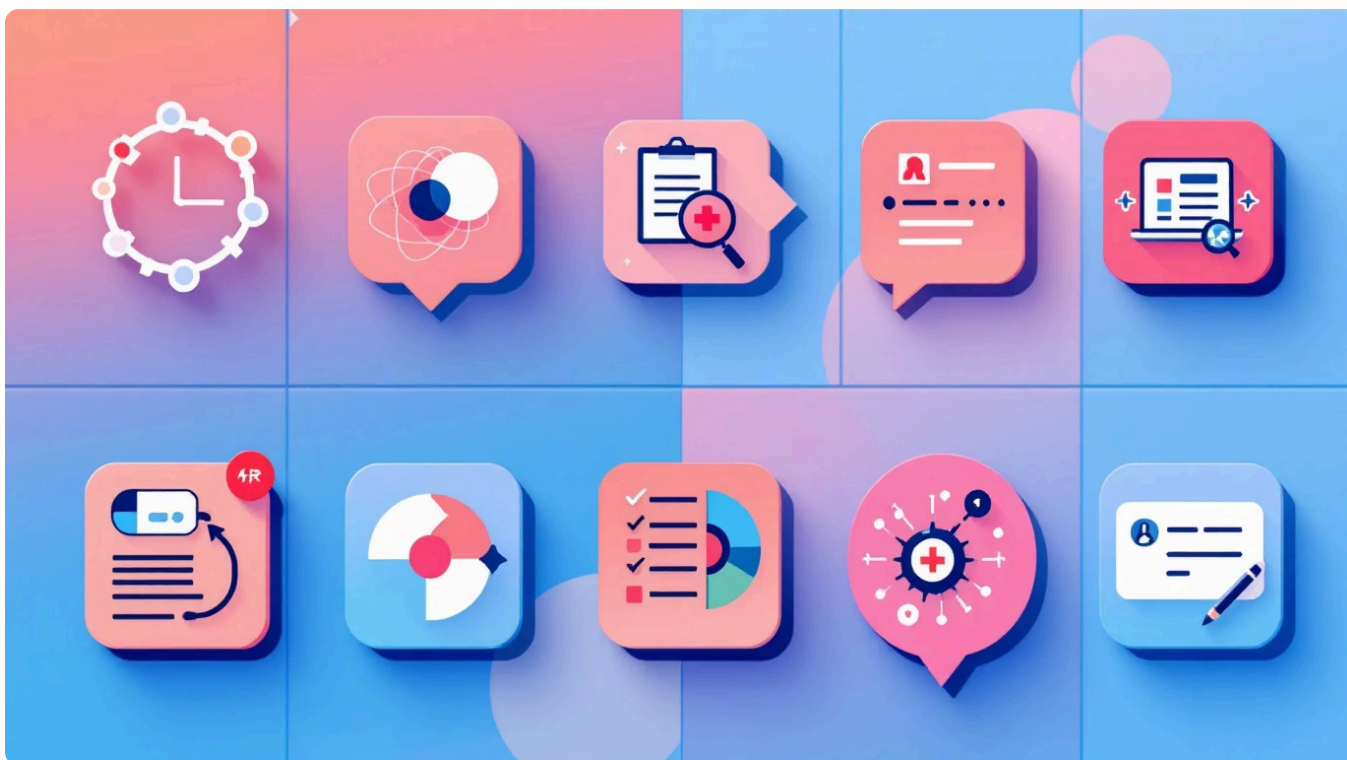
- AI-powered NLP + ML triage that converts natural language into structured clinical intelligence
- Prioritised risk score and concise doctor-ready summary
- Explainable outputs designed for clinical workflows

# System Architecture — Pipeline



Pipeline maps text → structured features → probabilistic predictions → actionable triage output.





## NLP Layer

- **Named Entity Recognition**

Identify symptoms, signs, medications

- **Severity & Duration**

Quantify intensity and timeline

- **Location & Negation**

Localise findings and detect absent symptoms

- **Structured Symptom Model**

Standardised clinical features for ML



## Machine Learning Layer

- XGBoost for disease probability prediction — calibrated, feature-aware
- Logistic regression for transparent risk scoring
- Trained on curated symptom→disease datasets with clinical labelling
- Outputs: real probabilities + explanation vectors

# Risk Stratification & Safety

## Emergency Classification

Immediate alerts for red-flag presentations

## Priority Levels

High / Moderate / Low with thresholds

## Red-flag Logic

Rule-based + model ensemble for safety

## Workflow Alignment

Actionable recommendations for triage teams

## Clinical Risk Stratification

Clinical Vector Manifested by story Cystion!







## Adaptive Follow-Up Questioning

- Dynamic, context-aware prompts to clarify key features
- Decision-tree + generative templates to improve confidence
- Minimises unnecessary questioning — focused data capture
- Feedback loop improves model performance over time

# Structured Clinical Output



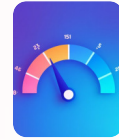
## Extracted Symptoms

Severity, duration, location, modifiers



## Top 3 Predicted Conditions

Ranked with probabilities and explanations



## Risk Score

Numeric score + interpretation  
(High/Moderate/Low)



## Recommended Next Steps

Testing, referral, urgent transfer suggestions



## Doctor-Ready Summary

One-page clinical brief for rapid decision-making