

Srini Venkataraman.

TECHNOLOGY LEADERSHIP / APPLIED AI

Leading technology. Building what's next.

I'm Srini Venkataraman. I bring together technology leadership, enterprise architecture, and software engineering to turn complex business problems into practical technology solutions. My work spans enterprise applications, data platforms, and applied AI.

SELECTED WORK

From architecture to working solutions.

Three projects exploring medication safety, healthcare interoperability, and energy analytics. Each case study shows the purpose, architecture, technical approach, application workflow, and public source repository.

01

FHIR Medication Safety Intelligence

Standards-based medication safety with AWS HealthLake, deterministic rules, guarded AI, and explicit FHIR write-back.

FHIR R4 · AWS HealthLake · AWS Lambda

02

Medication Safety Agent

Drug-drug and drug-lab analysis plus medication lookup, pre-add safety review, medication management, and grounded explanation.

Databricks · Unity Catalog · RxNorm

03

Energy Customer Insights

Automated energy data onboarding, usage investigation, weather context, and evidence-constrained AI explanation.

AWS S3 · Databricks · MLflow

Technology leadership. Engineering breadth.

My experience spans enterprise application development, architecture, engineering leadership, and technology strategy. I've led engineering teams, worked alongside data and analytics professionals, and guided software initiatives from planning and design through delivery and ongoing support.

I take a technology-agnostic approach, choosing tools and platforms that address business needs while aligning with enterprise standards and existing systems. Alongside my advisory work at Open Sky Health, I stay actively involved in hands-on development, building projects in data engineering, cloud platforms, and applied AI.

OPEN SKY HEALTH

Co-Founder & Technology and Product Advisor
April 2018–Present

Guide product strategy, architecture, and implementation planning, connecting business needs with technology decisions.

UAB MEDICINE

Director of Application Development
April 2001–April 2024

Led engineering teams and directed enterprise application development, systems integration, and modernization across hospital and ambulatory settings.

12+ enterprise applications · 30+ EHR enhancements · 10,000+ users supported

CAREER IMPACT

Technology at operational scale.

Led and directed application development supporting **10,000+ users** across hospital and ambulatory settings during my tenure at UAB Medicine.

12+ Enterprise applications Application development, integration, and modernization	30+ EHR enhancements Improved information access and clinician workflows	10+ Mobile & outreach applications Connections with consumers, external providers, and external organizations
1,400+ Providers Adoption of a mobile EMR application	400K+ Annual eSignatures iPad surgical-consent platform	288K+ Annual delivery events Integrated medical-device delivery platform

Education: MBA, University of Alabama at Birmingham | Master of Computer Applications, Bharathidasan University | BSc in Chemistry, Bharathidasan University
Selected accomplishments during my UAB Medicine tenure. Application categories may overlap.

Strategy, architecture, and delivery.

Leadership & delivery

Engineering leadership, team development, product and technology strategy, stakeholder alignment, architecture governance, and Agile delivery.

Applications & integration

Enterprise architecture, application modernization, APIs, and systems integration. Java, Spring Boot, React, React Native, RabbitMQ, HL7/FHIR, AWS HealthLake, and Oracle Health/Cerner integration.

Data & applied AI

Data engineering, analytics, cloud data platforms, and AI-assisted explanations grounded in source data. Python, SQL, Databricks, Unity Catalog, MLflow, and Amazon S3.

Engineering practice

Secure development, maintainable software, automated testing, and reliable delivery through DevOps and CI/CD.

WHAT COMES NEXT

Expanding into AI search and document intelligence.

My next projects will explore how vector search and retrieval-augmented generation (RAG) can turn unstructured documents into useful insights, with answers linked to supporting sources.

Healthcare document intelligence: retrieval across synthetic hospital notes with source-linked explanations.

Energy & utility AI search: document ingestion, semantic search, and grounded answers across utility documents.

FHIR Medication Safety Intelligence

FHIR-native medication safety: HealthLake retrieval → deterministic rules → guarded explanation → explicit FHIR write-back.

What the application demonstrates

FHIR clinical data is retrieved from AWS HealthLake, transformed into patient context, evaluated by deterministic drug-drug, drug-lab, and data-gap rules, and only then explained by AI. Analyze/explain remain read-only; DetectedIssue and RiskAssessment write-back is a separate explicit action.

10

Synthetic scenarios

Golden patient cases cover positive, negative, and missing-data workflows

HealthLake

Live backend

FHIR retrieval is verified against the deployed AWS datastore

Write-back

Explicit action

DetectedIssue and RiskAssessment persistence is implemented separately

Medication Safety Intelligence

Deterministic rules - grounded AI explanation - synthetic FHIR RA data

Synthetic demonstration data. Medication safety findings are generated by a limited prototype rule set and are not intended for patient care.

Live API connected AWS HealthLake

SYNTHETIC PATIENTS

- Alex Demo** (P001) 67 y - male
Lisinopril with elevated potassium
- Maya Demo** (P002) 71 y - female
Warfarin plus aspirin
- Daniel Demo** (P003) 64 y - male
Warfarin plus ibuprofen
- Priya Demo** (P004) 70 y - female
Metformin with severe renal impairment
- Sam Demo** (P005) 48 y - male
Insulin with level 2 hypoglycemia
- Emma Demo** (P006) 77 y - female
Lisinopril plus ibuprofen
- Ravi Demo** (P007) 60 y - male
Warfarin with INR above 4
- Lisa Demo** (P008) 68 y - female
Multiple findings: lisinopril/ibuprofen plus elevated potassium
- Jordan Demo** (P009) 45 y - male
Negative control: metformin with preserved renal function
- Nina Demo** (P010) 64 y - female
Data gap: lisinopril without a recent potassium result

Lisa Demo

P008 - 68 years - Female

FHIR RA data retrieved from AWS HealthLake through the application API

ACTIVE MEDICATIONS

Medication	Reference (BICU)	Dosage
Lisinopril	29846	20 mg once daily
Ibuprofen	5548	400 mg every 8 hours as needed

LABORATORY RESULTS

Lab	LOINC	Result	Flag	Reference	Date
Potassium	2823-3	5.9 mmol/L	⚠	3.5-5.1	2026-09-18
eGFR	8879-8	48 mL/min(1.73_m2)	⚠	—	2026-09-18

UNSTRUCTURED CLINICAL NOTES

Open Discharge Summary - 2026-09-18

Deterministic safety findings

Rule engine output — divides risk, severity and data gaps

Re-run analysis Rules v1.0.0 - data as of 2026-09-18 on-P008-450

OVERALL RESULT **HIGH** 2 findings 1 high 1 moderate 0 low 0 data gaps

Highest severity among configured rules that fired.

Saved to HealthLake Writes to the synthetic demo FHIR database only

Saved to the synthetic demo FHIR database

DetectedIssue (D: el-pot-el-45), el-pot-el-450
RiskAssessment (D: ra-pot-el-45)

HIGH 1 finding

HIGH Lisinopril with elevated potassium

Elevated potassium is a medication-safety concern in a patient receiving lisinopril.

Medication Lisinopril Reference 29846
Lab Potassium LOINC 2823-3 measured 5.9 mmol/L on 2026-09-18
Threshold Potassium > 5.7 mmol/L
Evidence DailyMed - potassium < /

Clinical data + deterministic findings

FHIR medications, labs and note context stay visually separate from the rule-engine result.

Nina Demo

P010

Data gap: lisinopril without a recent potassium result

HIGH 1 finding

HIGH Lisinopril with elevated potassium

Elevated potassium is a medication-safety concern in a patient receiving lisinopril.

Medication Lisinopril Reference 29846
Lab Potassium LOINC 2823-3 measured 5.9 mmol/L on 2026-09-18
Threshold Potassium > 5.7 mmol/L
Evidence DailyMed - potassium < /

Moderate 1 finding

Moderate Lisinopril with ibuprofen

Concurrent NSAID use can worsen renal function in susceptible patients; renal function should be monitored.

Medication Lisinopril Reference 29846 Ibuprofen Reference 5548
Evidence DailyMed - potassium < /

Presence & evidence

Data gaps

Configured checks that could not be completed — no value is ever estimated

No data gaps were reported

AI explanation OpenAI GPT-5.5-Like

AI explanation generated only from the deterministic findings above

Summary

Two configured medication-safety findings were identified: one high-severity drug-lab finding involving lisinopril and elevated potassium, and one moderate-severity drug-drug finding involving lisinopril and ibuprofen.

D-001 HIGH severity is set by the rule engine

Observed data show lisinopril 20 mg once daily and potassium of 5.9 mmol/L, reported as high on 2026-09-18. The deterministic rule fired because 5.9 is above the configured trigger of >5.7 mmol/L. The finding states that elevated potassium is a medication-safety concern in a patient receiving lisinopril. The supplied evidence notes that renin-angiotensin system inhibitors can cause hyperkalemia and recommends periodic serum potassium monitoring; the 5.7 mmol/L trigger is prototype-specific and is not a universal treatment threshold.

D01-001 MODERATE severity is set by the rule engine

Observed medication data show concurrent lisinopril 20 mg once daily and ibuprofen 400 mg every 8 hours as needed. The deterministic drug-drug rule identifies this combination as a moderate-severity finding because concurrent NSAID use can worsen renal function in susceptible patients; the supplied evidence advises periodic renal-function monitoring. No laboratory result was used as evidence for this rule.

AI explains existing findings and supporting evidence only. It cannot create findings, change severity, infer missing values, or independently make treatment recommendations. Clinical notes are used as context only.

Data gaps + grounded AI

Findings retain evidence and severity; AI is constrained to explain what already exists.

Representative Lisa Demo scenario: HIGH drug-lab finding for lisinopril with elevated potassium plus MODERATE drug-drug finding for lisinopril with ibuprofen. Synthetic demonstration only; not intended for patient care.

GitHub: github.com/srini-tech-labs/fhir-medication-safety-intelligence

Medication Safety Agent

One application combines Medication Safety Analysis with Medication Management against a shared patient/lab context.

Safety Analysis

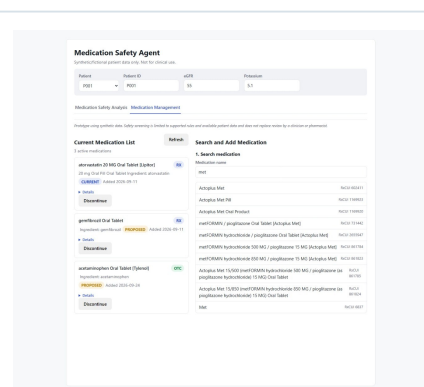
Deterministic drug-drug and drug-lab findings with severity, evidence citations, RxNorm-normalized medications, and a grounded AI explanation.

Medication Management

4-step add wizard (Search → Review → Safety Check → Add), Current/Proposed states, acknowledgement gating, stale-result invalidation, duplicate/timeout handling, and soft-discontinue with history preserved.

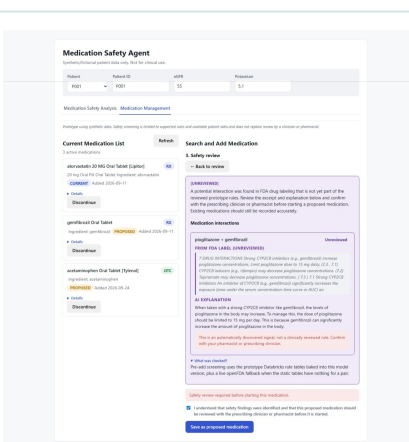
Trusted fallback

When the curated table has no pair, live openFDA labeling can surface an Unreviewed signal with a trusted excerpt; AI paraphrases the evidence but does not turn it into a reviewed rule.



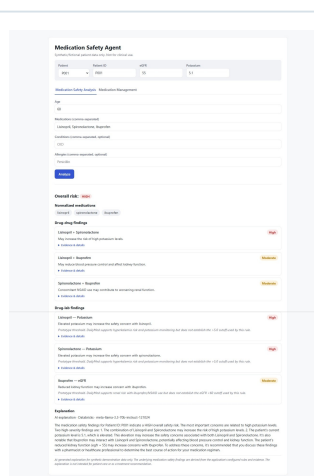
Medication lookup

RxNorm/RxTerms search while the active list remains visible.



Pre-add safety review

Elevated findings require acknowledgement before persistence.



Drug-drug + drug-lab findings

Separate findings, evidence, severity, and explanation.

3 + 3

Representative findings

P001 demonstrates three drug-drug and three drug-lab findings

4-step add

Medication workflow

Search → Review → Safety Check → Add

Demo mode

Public demonstration

Repository can demonstrate the UI without a Databricks account

Engineering testing remains supporting evidence rather than the product headline. Synthetic demonstration only; not intended for patient care.

GitHub: github.com/srini-tech-labs/medication-safety-agent

Energy Customer Insights

Automated onboarding + governed lakehouse analytics + customer-facing investigation + evidence-constrained AI explanation.

Automated pipeline

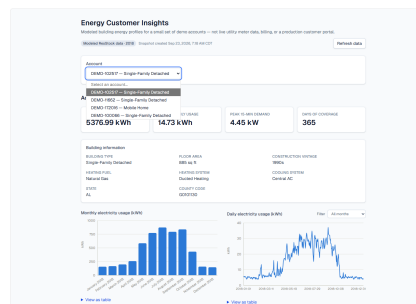
S3 incoming → scheduled Lambda copy/verify/archive → Databricks Auto Loader → Bronze/Silver/Gold → published snapshot → model serving → React/TypeScript frontend.

Validated onboarding

A fourth building flowed through the complete pipeline and appeared automatically in the frontend account selector with no manual frontend change.

Evidence-first explanation

The pipeline computes monthly deltas, end-use contribution, and degree days before AI sees anything. The model describes the evidence; it does not calculate the metrics.



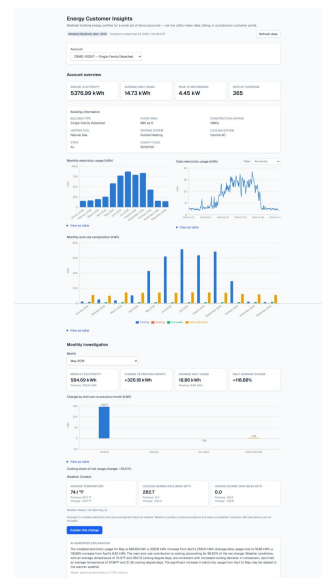
Dynamic account selection

New processed buildings can appear without UI code changes.



Account overview + trends

Usage, building context, daily/monthly trends, and end-use composition.



Investigation + explanation

Month-over-month change, weather context, and grounded narrative.

4 accounts

Validated dynamic set

Gold, snapshot, live endpoint, and frontend after the fourth-building run

+326.18 kWh

Representative change

April-to-May net usage increase for DEMO-102517

98.93%

Cooling share

Portion of the representative net increase associated with cooling

Modeled ResStock demonstration data; not a production utility billing or customer-service system.

GitHub: github.com/srini-tech-labs/energy-customer-insights