



IC09

Codeless Queries:

Harnessing AI to Translate Clinical Trial Questions into Custom Listings through Intuitive UI Interactions

February 2024



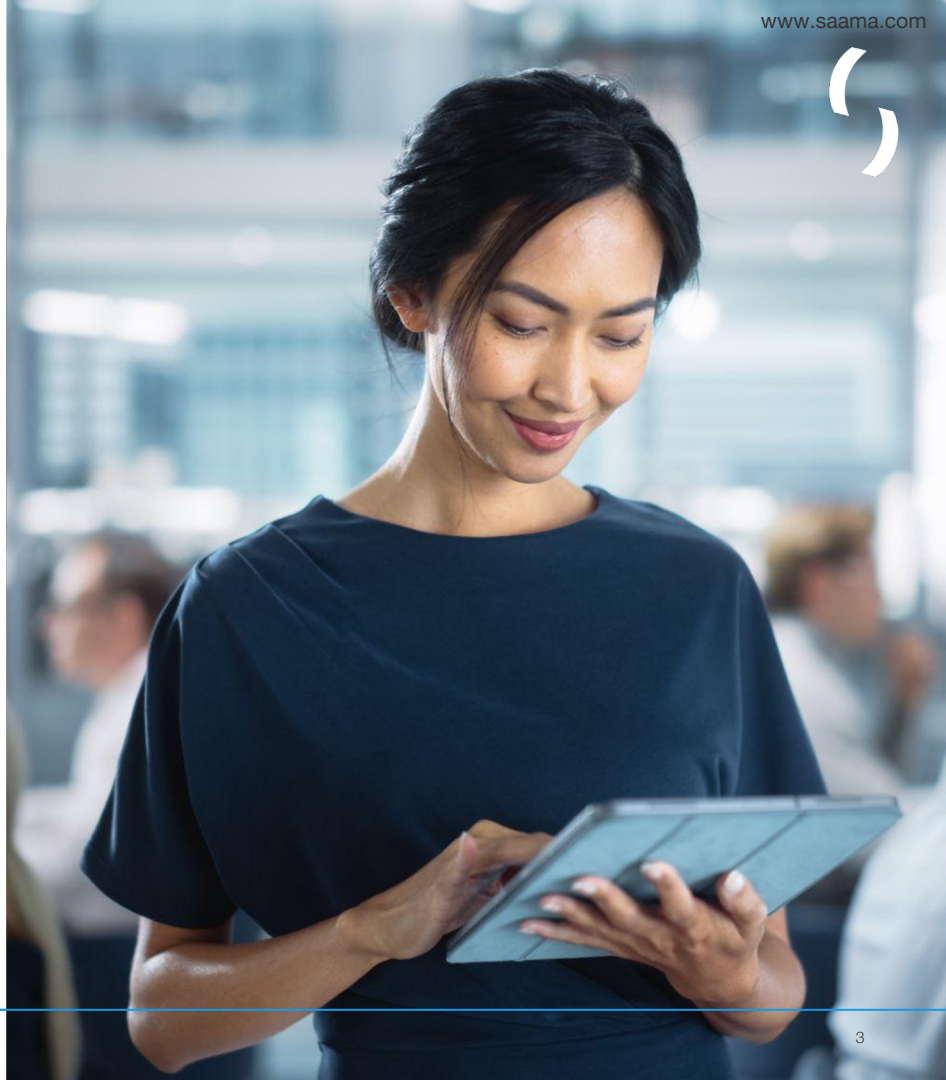


Aditya Gadiko

Global Director, Patient Insights

Agenda

- Problem Statement
- Current Approaches & Challenges
- Potential Applications
- New Approach Proposal



Problem Statement

***How to accelerate a Programmer's
Workflow?***

Current Approaches

- **SAS / R /SQL /Python + Domain** knowledge required
- **Using AI/ML to automate** has not been successful yet
- **Other approaches** (for example, Mapping History)
have seen limited success

Problems with Current Approaches

- **Resource Intensive**
- **AI – How do we Validate Results?**
- **AI – How do we trust AI?**
- **AI – Hallucinations**
- **Lack of easily accessible ground truth/training data**

New Approach Proposal

***English as a Programming language with
a human-in-loop approach***

Potential Applications of New Approach

- **Validated* custom Datasets** (Multi-Domain Safety Efficacy) in seconds vs hours/days
- **Validated* Build Study Specific Rules** in seconds vs hours
- **Convert Specs to code** in seconds vs hours/days
- **Generate accurate* SQL code** in seconds vs hours
- **Interoperability – Flexibility around Data Standards**

Show me subjects with abnormal heart rate and age between 20 and 25 and lab total cholesterol is greater than 220 mg/dl

1

2 Entities Confirmation for 100% Accuracy

Bridge

Abnormal IS Yes AND Age IS 20 - 25 AND
Lab test IS Cholesterol AND Lab Result IS > 220

UI Editable

3 Result

Postgresql Engine
for Query Execution

Study	Site	Subject	Lab Result	Age	Lab Test
Beta 55	55-2-12	SS1084	234	21	Cholesterol
Beta 55	55-2-12	SS1084	250	24	Cholesterol
Beta 55	55-2-12	SS1084	290	24	Cholesterol



Human
Feedback

Save as Custom Rule Summarize Add/Drop Columns Export CSV / SQL
Create Visuals Patterns Outliers More >

Examples of
some actions or
applications

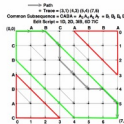
Type your question here....

Contextual Memory

Entities Autocomplete



Entities Recognition and
Spell Correction



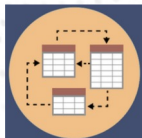
Ratcliff Oshershop Algorithm

Categorical, Numeric &
Dates Value Extraction

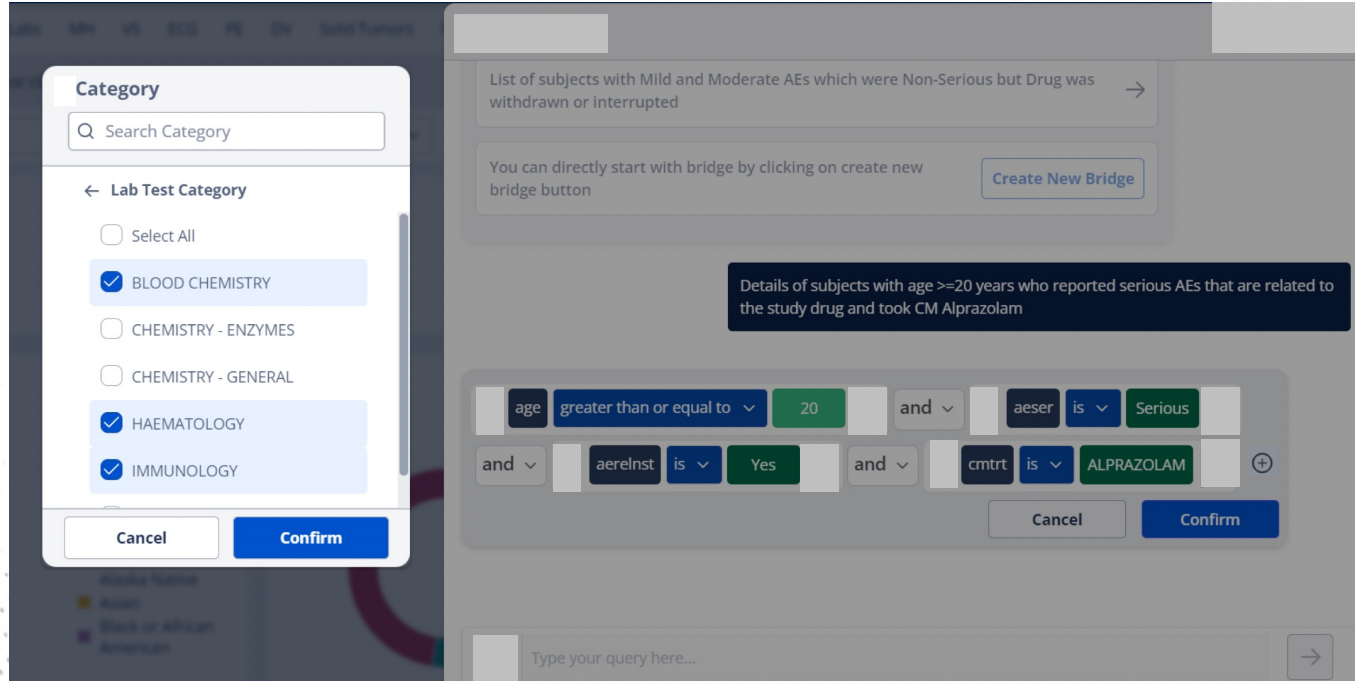


Choice of LLM – Paid,
Open source or internal

Mapping of identified
entities to Data Model



Proposal for Sample UI



The image shows a sample user interface for a clinical trial query builder. It features a sidebar with a 'Category' dropdown menu, a main content area with a list of subjects, and a query builder section with a search bar and a query construction area.

Category

Q Search Category

← Lab Test Category

- ☐ Select All
- ☒ BLOOD CHEMISTRY
- ☐ CHEMISTRY - ENZYMES
- ☐ CHEMISTRY - GENERAL
- ☒ HAEMATOLOGY
- ☒ IMMUNOLOGY

Cancel Confirm

List of subjects with Mild and Moderate AEs which were Non-Serious but Drug was withdrawn or interrupted →

You can directly start with bridge by clicking on create new bridge button [Create New Bridge](#)

Details of subjects with age ≥ 20 years who reported serious AEs that are related to the study drug and took CM Alprazolam

age greater than or equal to 20 and aaser is Serious

and aereinst is Yes and cmtrt is ALPRAZOLAM +

Cancel Confirm

Type your query here... →

Questions?

Aditya.Gadiko@Saama.com

[Linkedin.com/in/AdityaGadiko](https://www.linkedin.com/in/AdityaGadiko)





Active **open source contributions**



Research Collaboration

Hackathon – Make AI Research Fun!

Meetups – Spread the knowledge

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