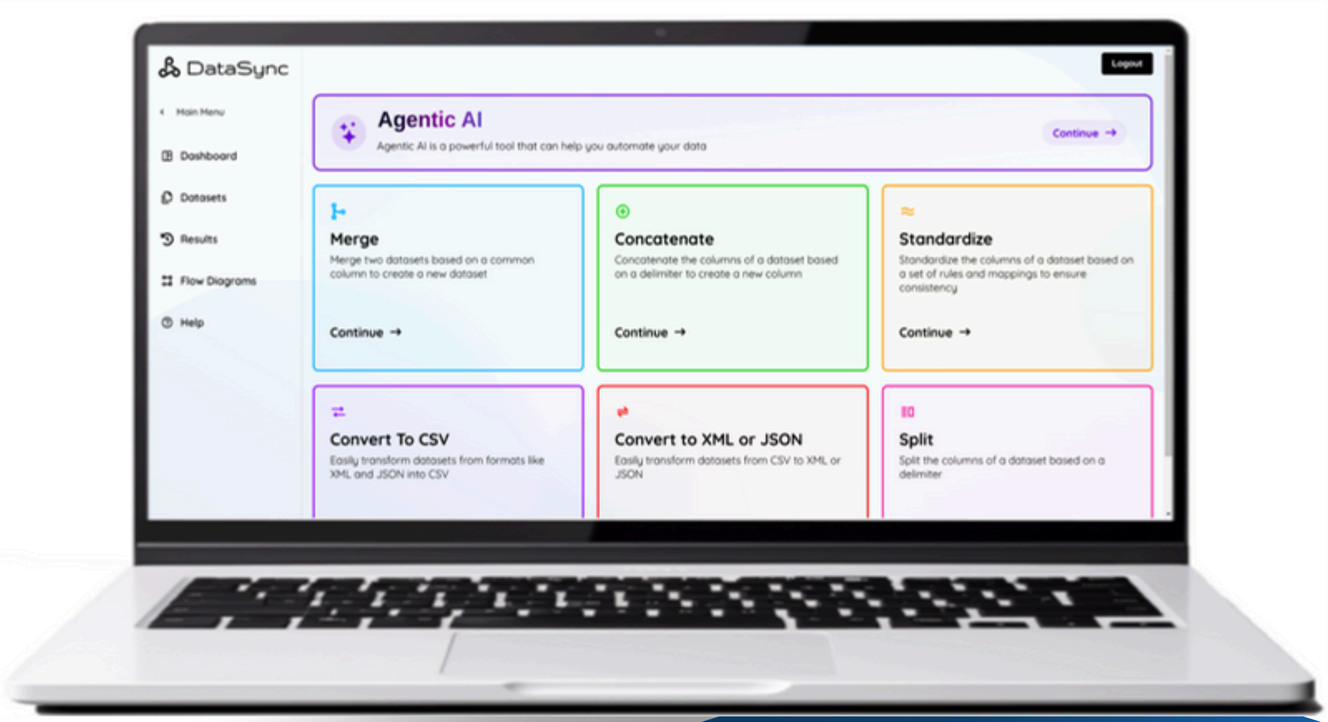
DATA STANDARDIZATION PLATFORM USING AGENTIC AI



Presented By :

Joy
Lalith Chatala

Problem Statement

- In the defense sector, data is often dispersed across multiple databases and stored in diverse formats, creating significant challenges in data accessibility, integration, and standardization.

- Furthermore, the manual execution of transformation tasks increases operational complexity and reduces efficiency. To overcome these limitations, we propose the development of an intelligent data integration platform that employs a flowchart-driven interface for orchestrating sequential operations and incorporates AI-powered recommendations and suggestions.

For Example :

Data_1.csv

CSV Data | 7 | Search (regex) | Select Dataset

Id	Full Name	Gender
1	Rahul Sharma	Male
2	Ananya Singh	female
3	Vikram Patel	M
4	Neha Kapoor	F
5	Arjun Rao	MALE

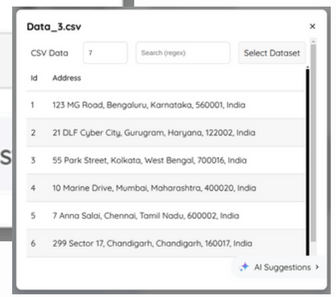
Showing **1-6** of **6** rows | prev | Page **1** of **1** | AI Suggestions ›

Data_2.csv

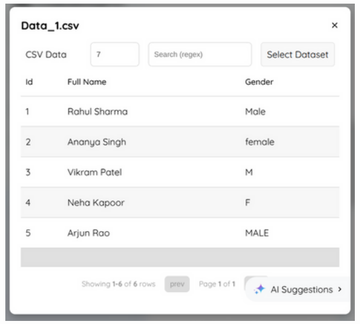
CSV Data | 7 | Search (regex) | Select Dataset

Id	First Name	Last Name
2	Ananya	Singh
3	Vikram	Patel
4	Neha	Kapoor
5	Arjun	Rao
6	Kavya	Iyer

Showing **1-6** of **6** rows | prev | Page **1** of **1** | AI Sugges



For Example :


Data_1.csv
CSV Data
7
Search (regex)
Select Dataset
Id
Full Name
Gender
1
Rahul Sharma
Male
2
Ananya Singh
female
3
Vikram Patel
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Neha Kapoor
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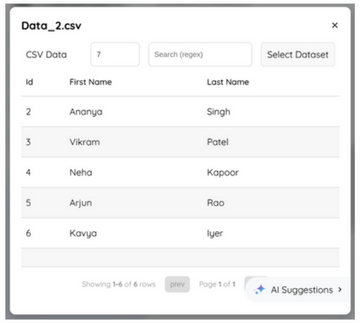
Showing 1-6 of 6 rows
prev
Page 1 of 1
AI Suggestions


Data_2.csv
CSV Data
7
Search (regex)
Select Dataset
Id
First Name
Last Name
2
Ananya
Singh
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Patel
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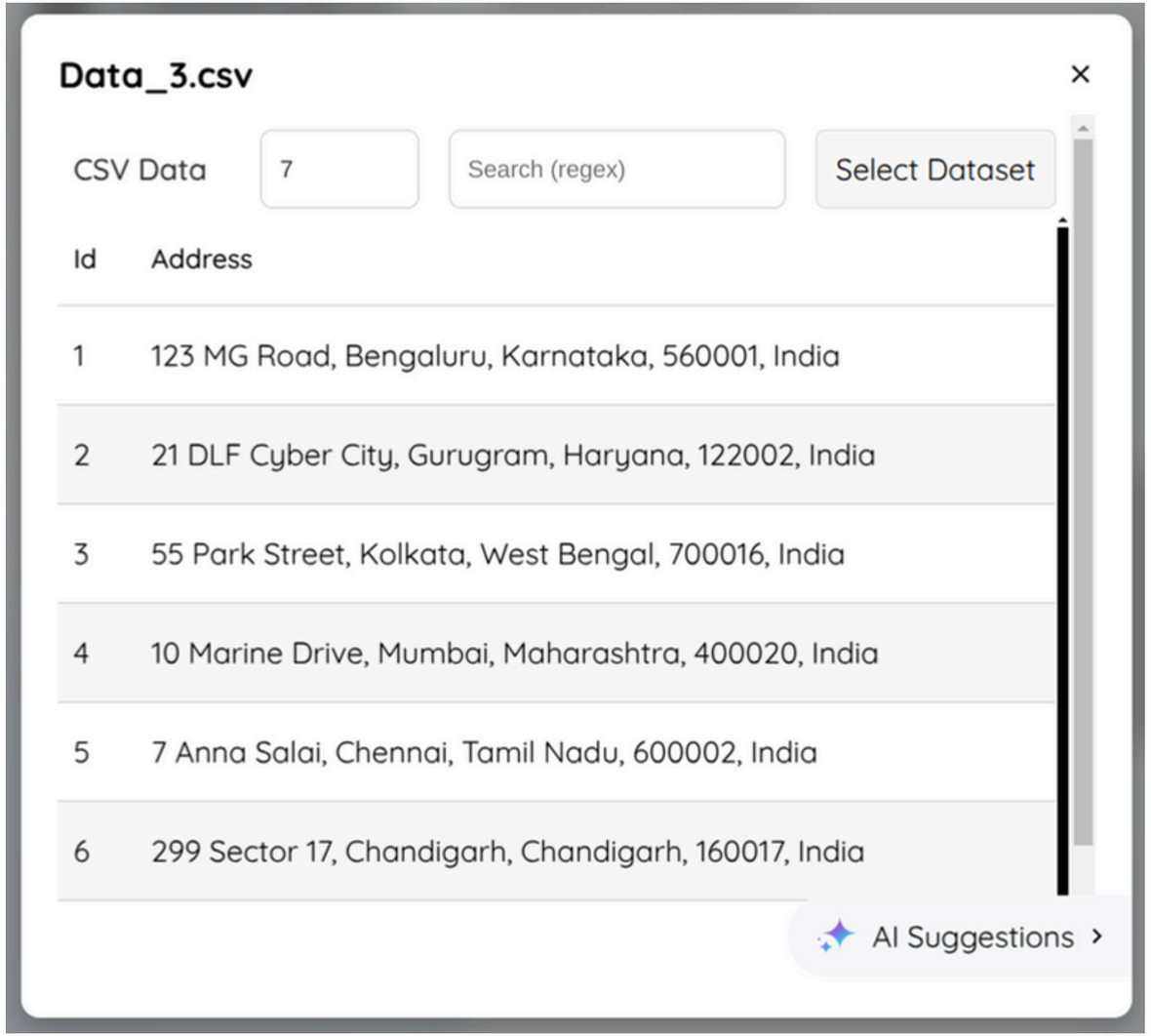
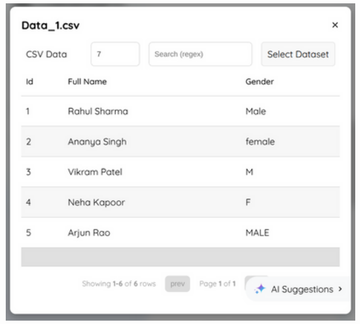
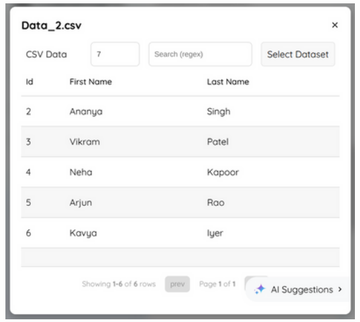
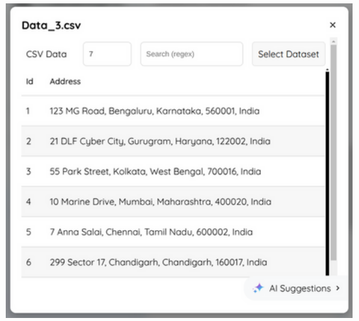
AI Suggestions

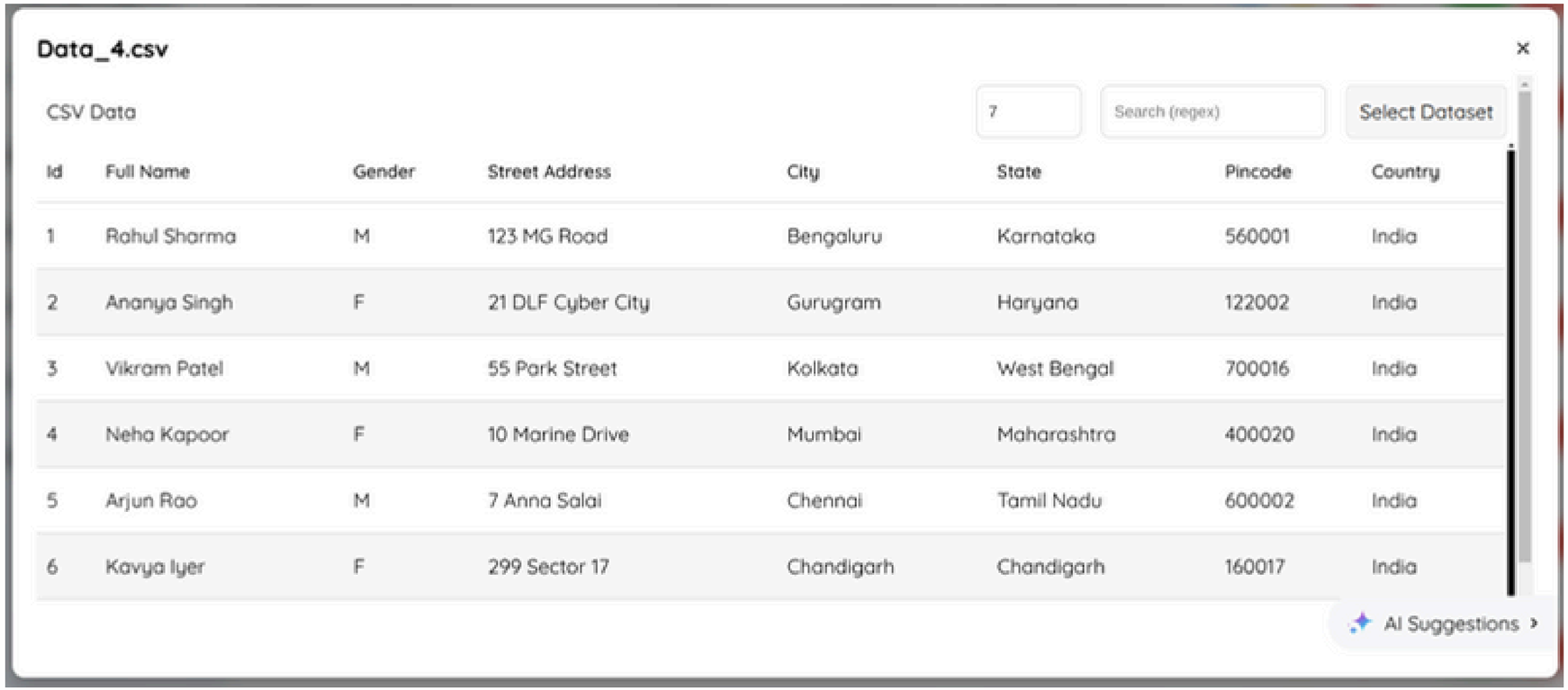

Data_3.csv
CSV Data
7
Search (regex)
Select Dataset
Id
Address
1
123 MG Road, Bengaluru, Karnataka, 560001, India
2
21 DLF Cyber City, Gurugram, Haryana, 122002, India
3
55 Park Street, Kolkata, West Bengal, 700016, India
4
10 Marine Drive, Mumbai, Maharashtra, 400020, India
5
7 Anna Salai, Chennai, Tamil Nadu, 600002, India
6
299 Sector 17, Chandigarh, Chandigarh, 160017, India
AI Suggestions

For Example :





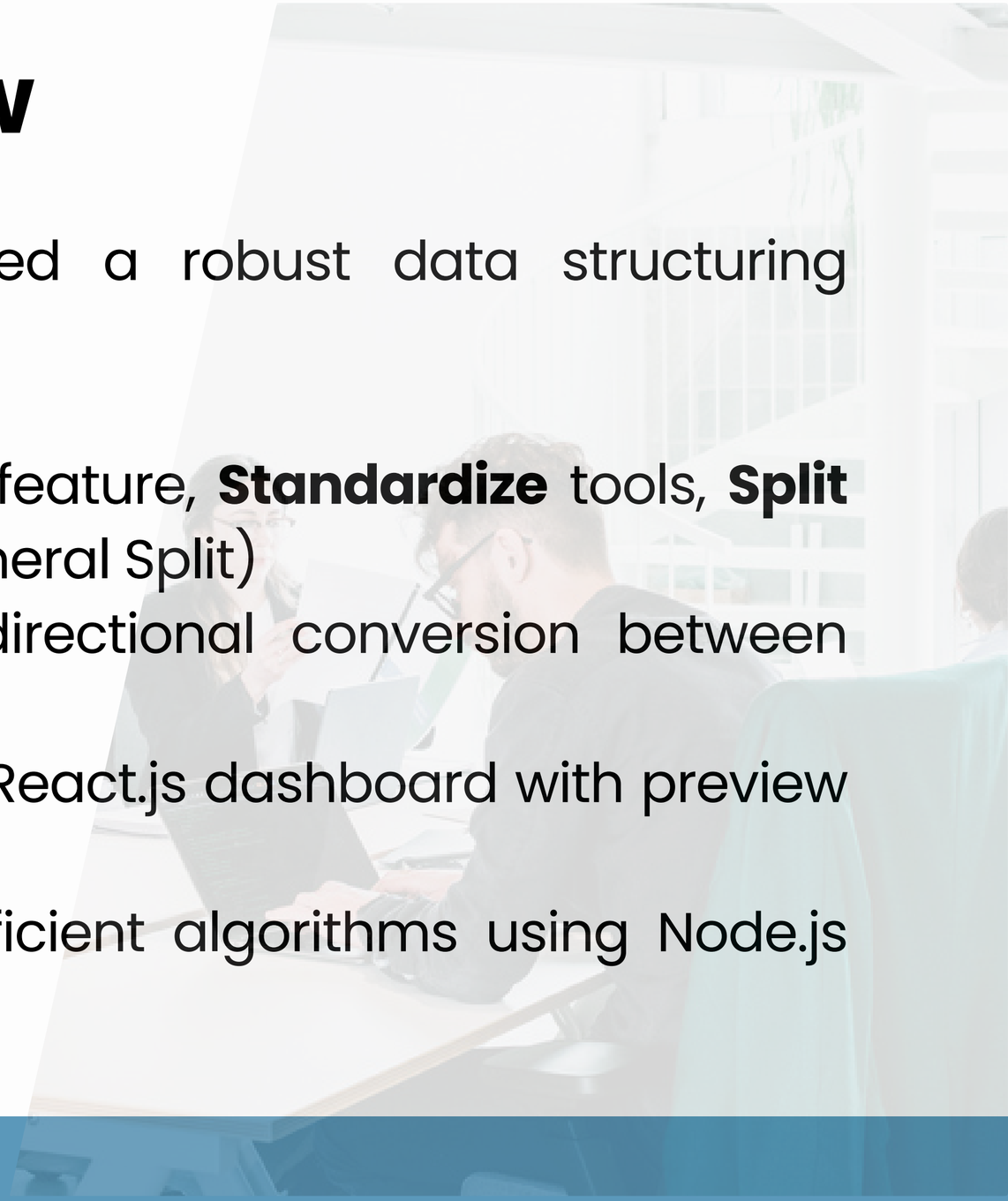




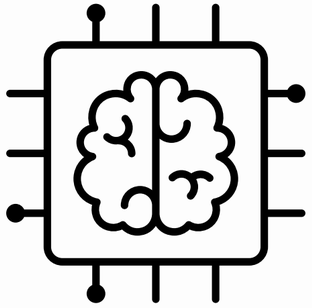
Standardized...!!

Till Now

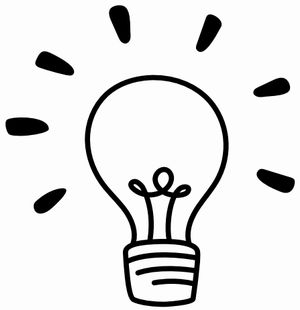
- Framework Development: Designed a robust data structuring framework for defense systems
- Data Transformation Operations:
- **Merge** functionality, **Concatenate** feature, **Standardize** tools, **Split** functionality (Address Split and General Split)
- File Conversion: Implemented bidirectional conversion between CSV, XML, and JSON formats
- User Interface: Developed intuitive React.js dashboard with preview functionality
- **Backend** Implementation: Built efficient algorithms using Node.js and MongoDB



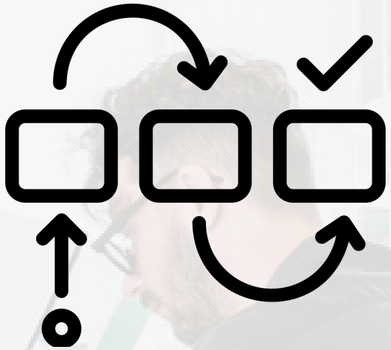
Current Semester Works



Agentic AI Integration



AI Based Suggestions



FlowDiagrams

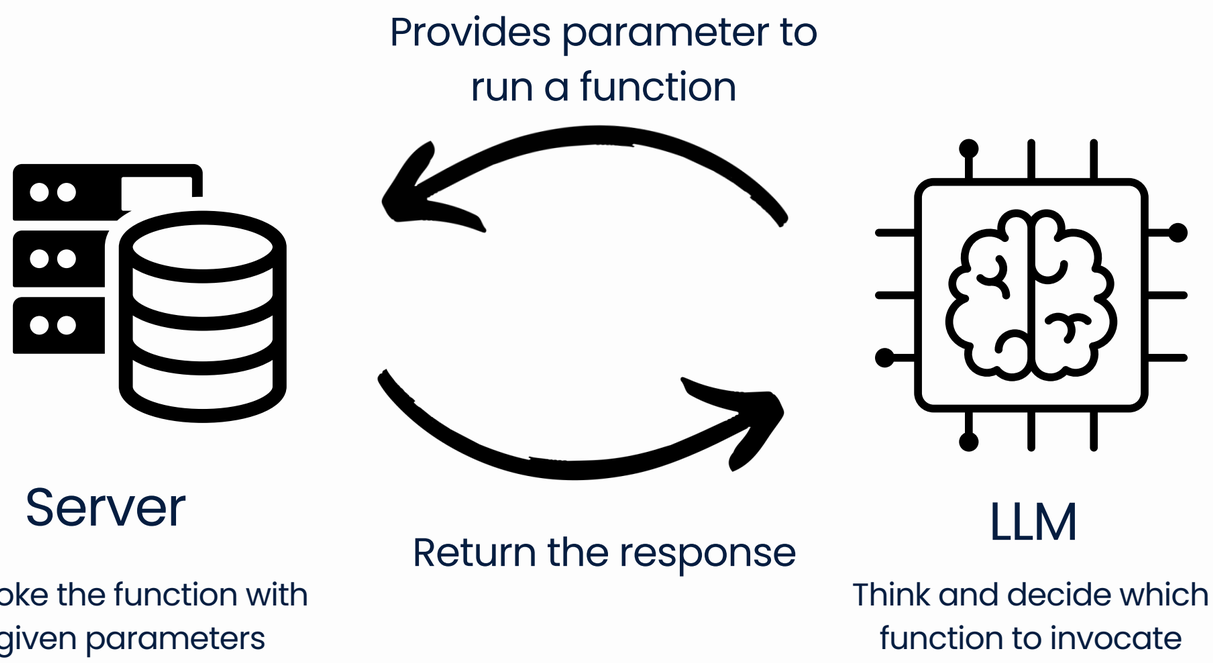
Agentic AI

Reference : *ReAct: Synergizing Reasoning and Acting in Language Models*

The ReAct paper shows how AI can be made smarter by teaching it to "think out loud" while taking actions. Instead of just guessing answers, AI systems using this approach talk through their reasoning step by step and interact with outside sources or any predefined action to check facts and generate answers. This combination of reasoning and action helps the AI make fewer mistakes and solve problems more reliably, making it much better at tasks like answering questions or making decisions in games.

Agentic AI

How it Works??

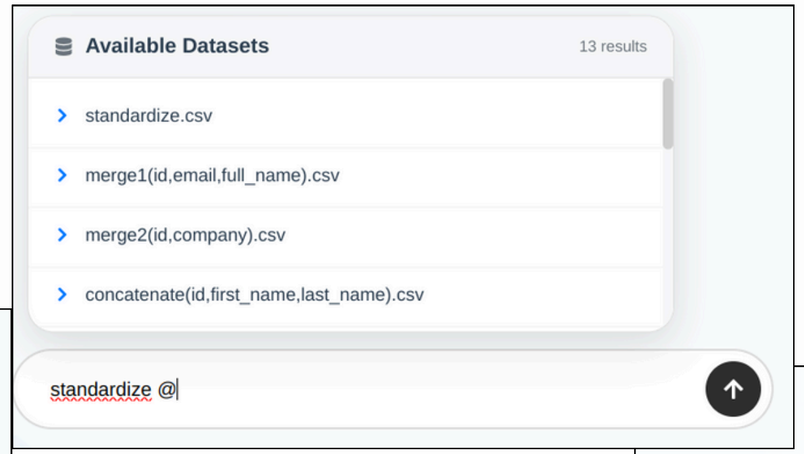


When users submit requests, the AI reasons through requirements and generates parameters for server-side function execution. After the server processes these parameters, it returns results to the AI for analysis. The AI then either provides a final response based on this information or identifies the need for additional processing. If more data is needed, the AI initiates new function calls with fresh parameters, creating a reasoning-action loop until task completion.

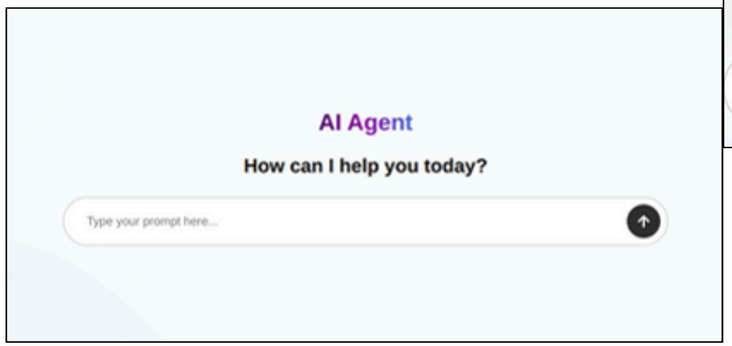
Agentic AI

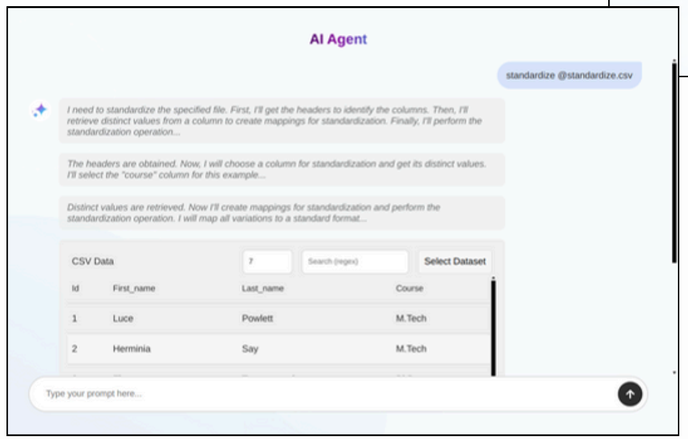
User Workflow :

Tag the datasets using '@' in chat input



Enter the prompt and wait for the results





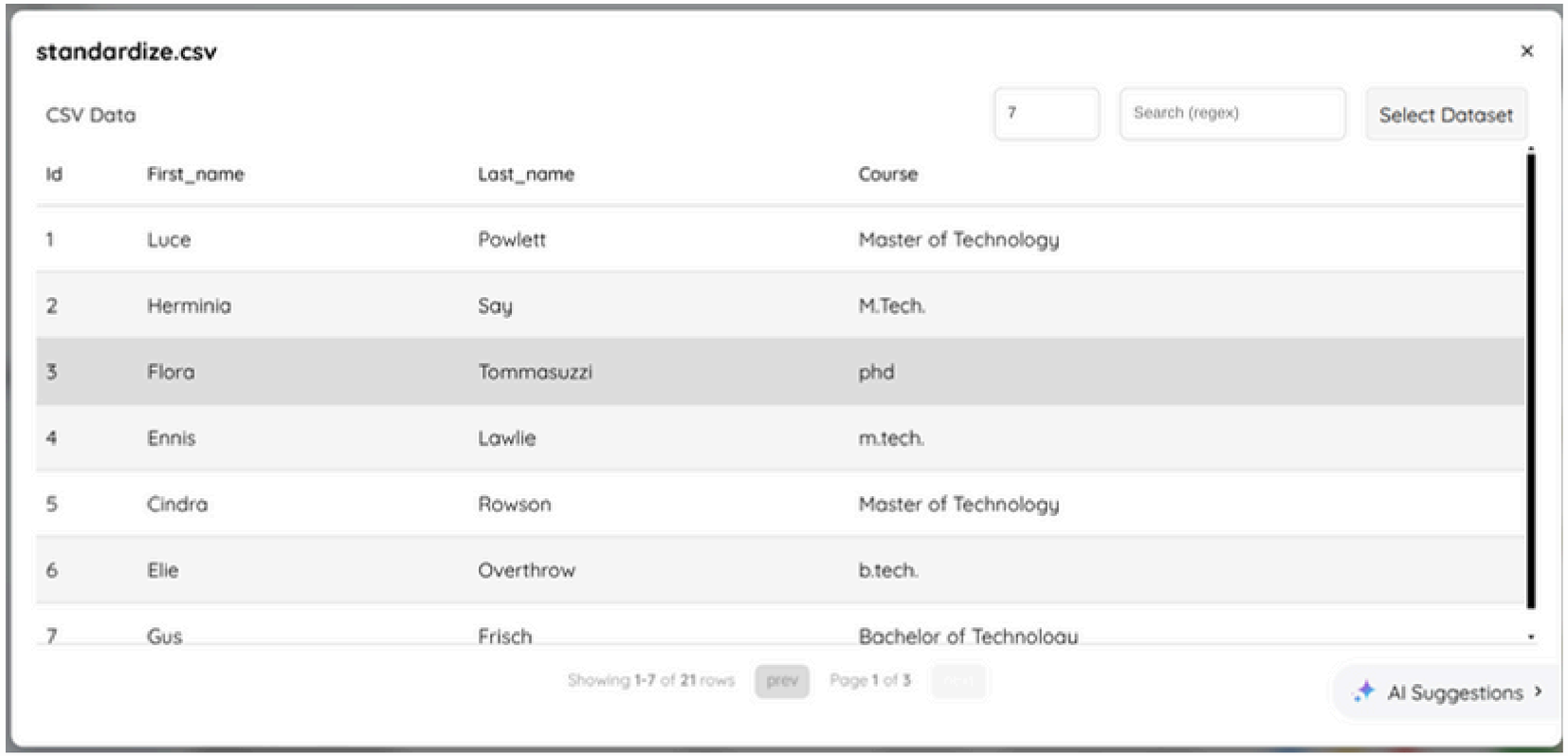
Once the results are generated, they are being displayed on chat with the thought of process

You can continue the chat or can start a new chat for next task

Agentic AI

Example :

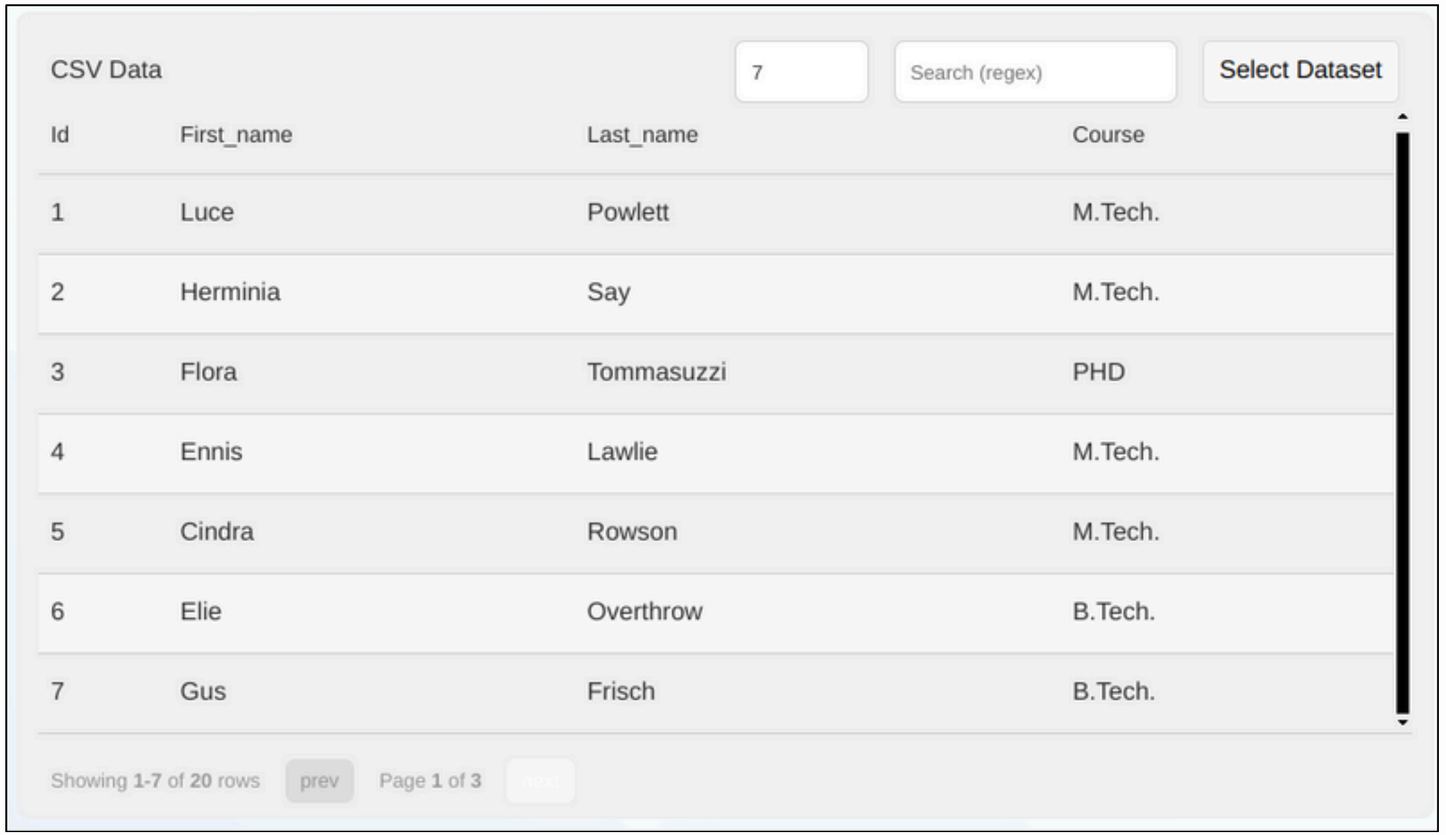
I want to standardize a dataset which looks like follows :



You can see it contains some unstandardized values like “M.Tech.”, “m.tech.”, and “Master of Technology” which refers to the same thing.

Agentic AI

I will enter the User Prompt : ***“Standardize @file_name.csv”*** in AI chat input, wait for the results and the result CSV will be displayed in the chat itself :



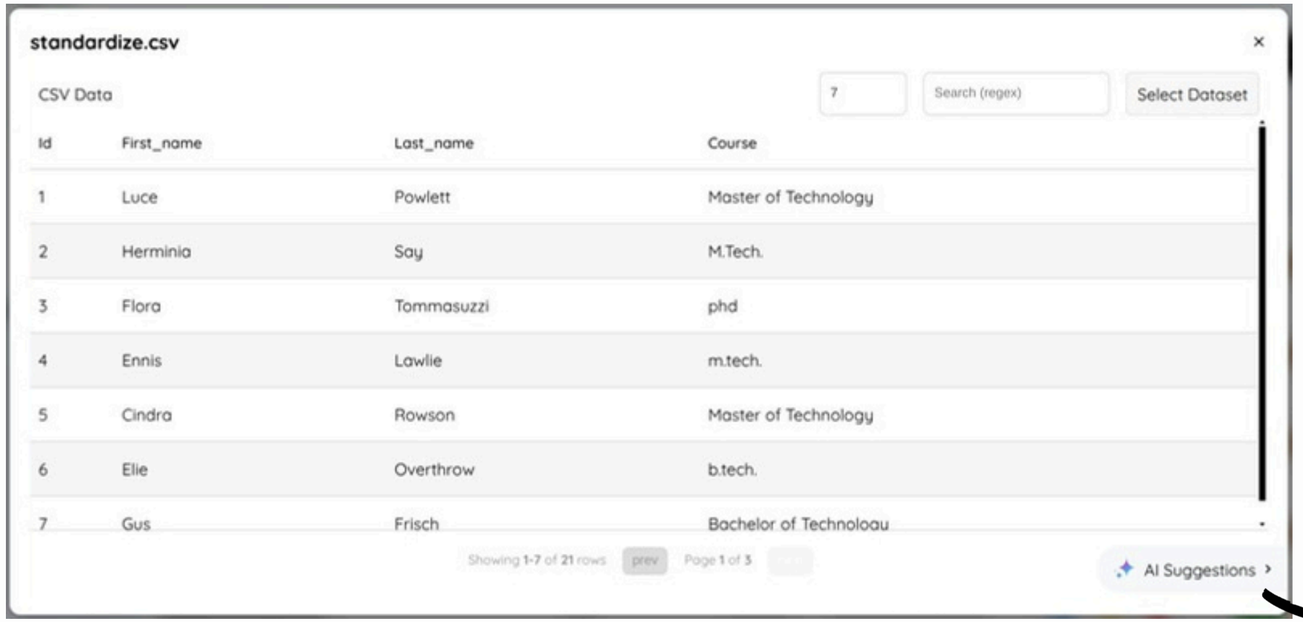
The unstandard values are now converted to a standard format with the mapping thought using AI.

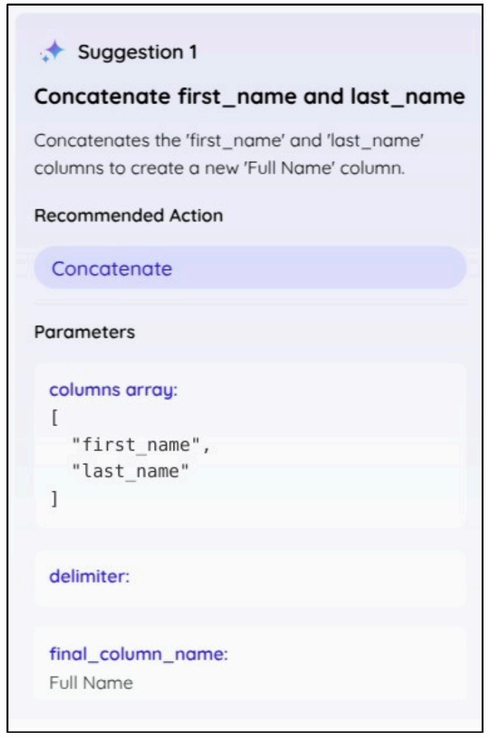
We can show you the demo as well.....

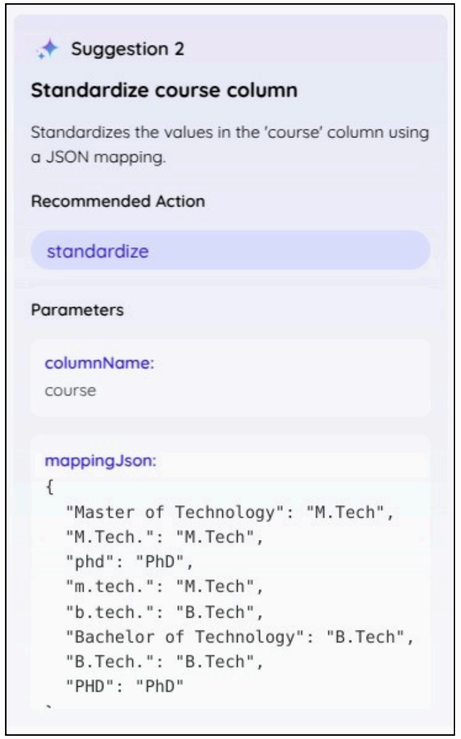
Agentic AI

AI Suggestions :

We have created an option to provide suggestions to any dataset.
Accessible through the Dataset and Results Tab.



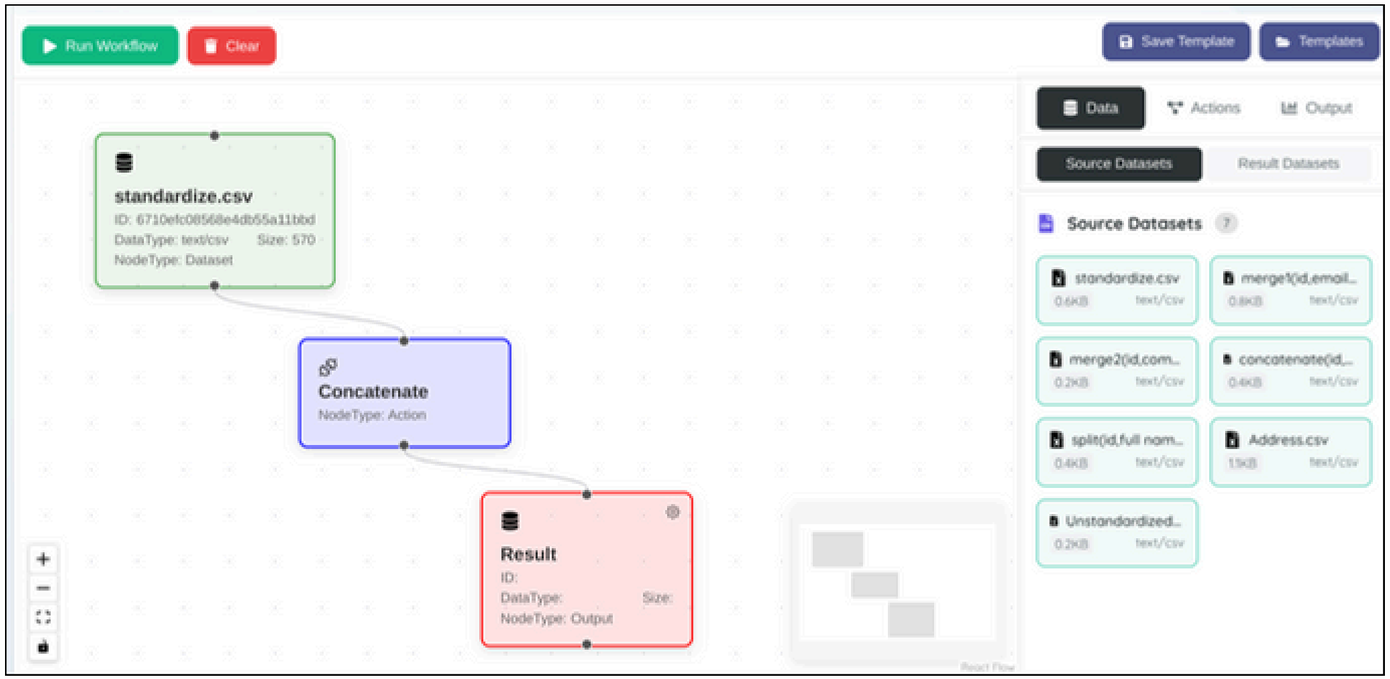




Flow Diagrams

We integrated the React Flow Diagram library to offer a visual, drag-and-drop interface for designing data workflows.

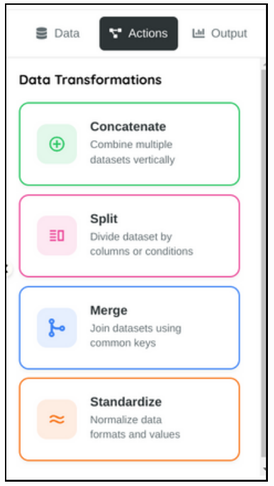
Users can connect dataset and action nodes (Merge, Split, Concatenate, Standardize), configure parameters via a sidebar, and execute pipelines in real time—**reducing clicks** and **enhancing usability** with an intuitive, visual experience.

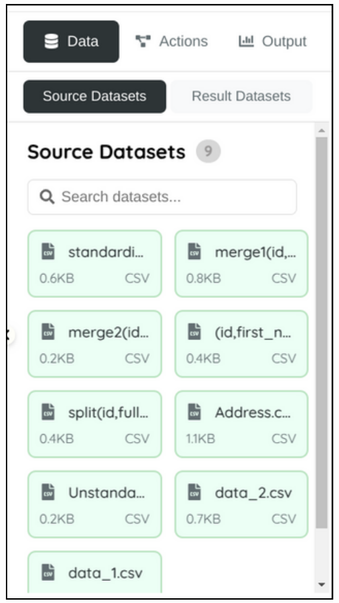


FlowDiagram Example

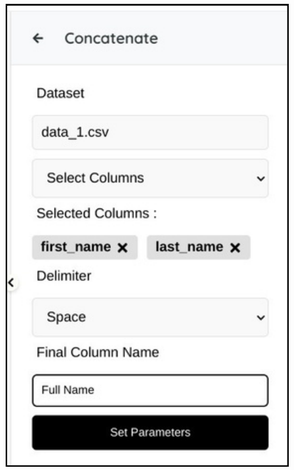
User Workflow :

First select a dataset and then, select action you need to perfom

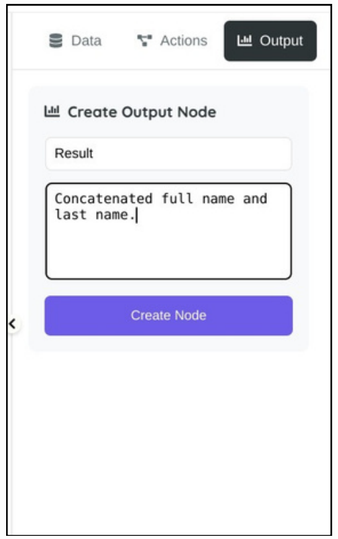




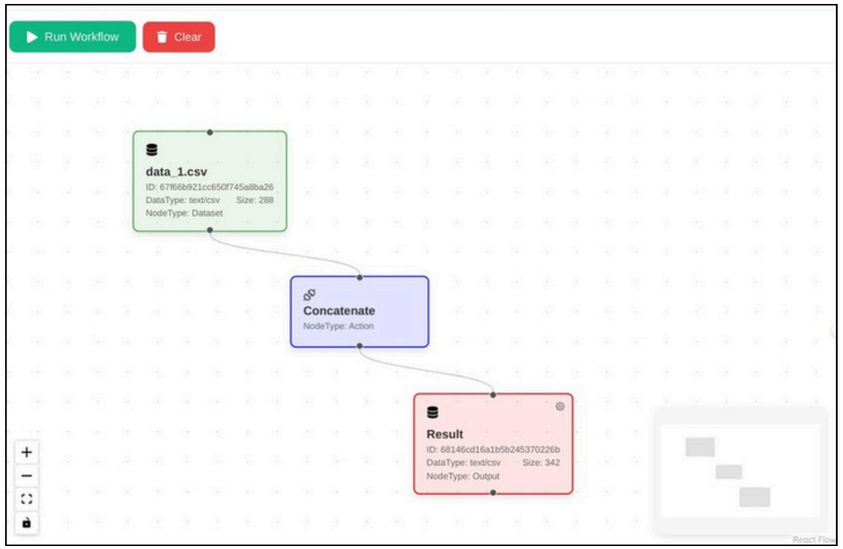
Then add the parameters



Add a result node



When all three are connected, you can run the workflow.



SO, THAT ALL ABOUT THIS SEMESTER...!

IF YOU HAVE ANY QUESTIONS...
YOU CAN ASK!

Github : https://github.com/Joy-2612/DataMap_ETL_Tool
Datasync User Guide : Drive Link

THANK YOU!

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