

**MICHIGAN STATE**  

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**UNIVERSITY**

# Beta Presentation

## Provider Anomaly Analytics Toolkit

### The Capstone Experience

### Team Roosevelt Innovations Data Science

Justin Doan  
Carson Honkala  
Jeffrey Lo  
Tanawan Premisri  
Kate Roney  
Junchi Zhu

Department of Computer Science and Engineering  
Michigan State University

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*From Students...  
...to Professionals*

# Project Overview

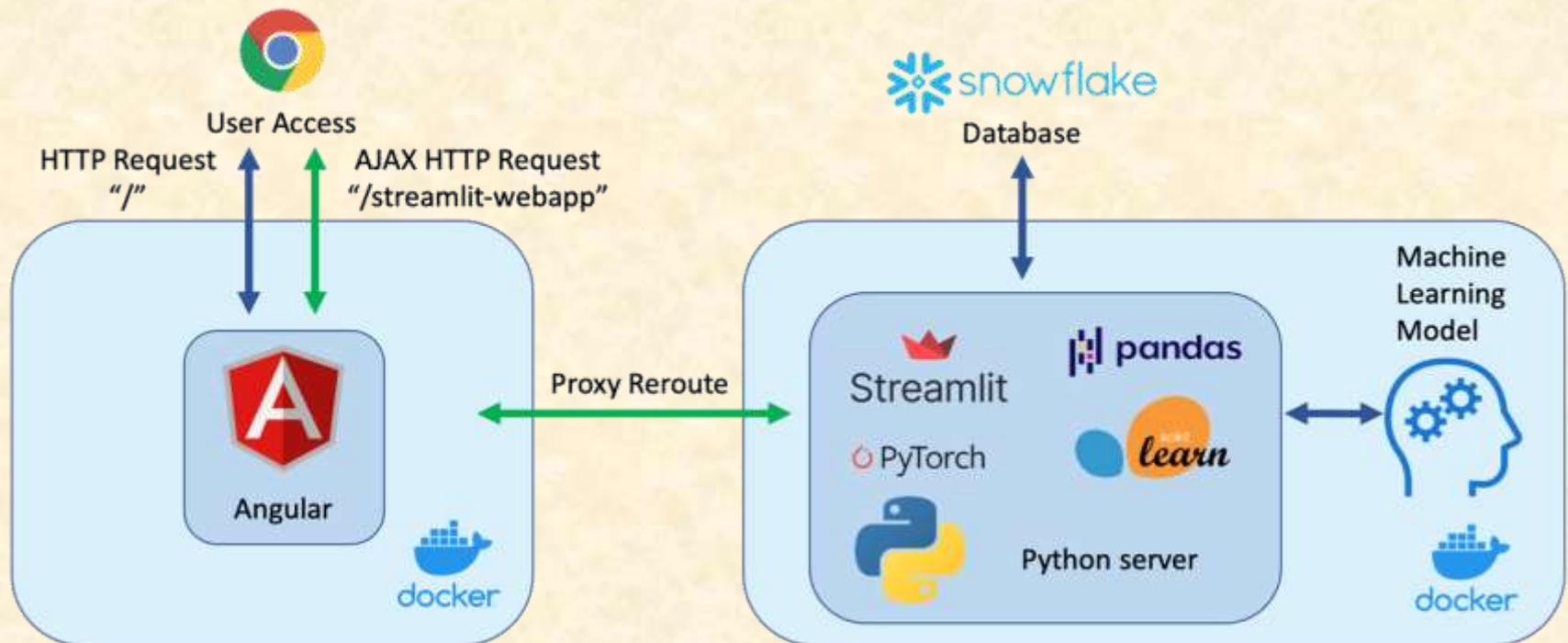
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- Web app to help eliminate fraud, waste, abuse
  - Provides visualizations
  - Automatically suggest outliers
  - Combines all the data sources into one
- Improves expected quality of care and cost



# System Architecture

Roosevelt  
simple. seamless. smart.



# Home Screen

The screenshot shows a web browser window with the URL `localhost:8501/streamlit-webapp/`. The application interface includes a sidebar on the left with four navigation icons: Home (highlighted with a red box), Comparison, Summary, and Watch List. The main content area is titled "Home" and features a filter bar with dropdown menus for State (MI), City (Select City), Provider (Select Provider), and Provider ID (Select Provider ID), along with a Risk Score filter. Below the filters is a table with the following data:

State	City	Provider	Provider ID	Prior Group	Risk Score	Total plan pay	Total number of...	Total # of patients
MI	Lansing	Hartmann Switham	1711898	8	0	429618.25	194	2965
MI	Lansing	"Davis, Wilmet an...	1125040	1	0	395123.09	172	1044
MI	Lansing	"Jaskolski, Gaylon ...	1120974	8	0	922336.75	206	2383
MI	Battle Creek	Kunze LLC	1127980	5	0	527403.29	214	1588
MI	Detroit	"Walker, Katherine an...	1128998	8	0	495084.19	254	1585
MI	Detroit	Lochner Inc	1133378	2	0	139270.4	240	828
MI	Flint	"Gulgowski, Franc...	1127875	8	100	431885.35	186	888
MI	Farmington	"Waters, Stroman a...	1131513	1	8	229007.06	81	323
MI	Troy	"Wertz, Skiles and C...	1133011	4	0	182012.05	191	1237
MI	Flint	Harber and Sons	1132632	8	0	305708.33	204	940

Below the table is an "Add To Watch List" button. A "See List" popup window is visible in the top right corner, showing a list of providers with columns for Provider and Provider ID. The list includes "Walter, Katherine and Farrell" with Provider ID 1128998 and "Lochner Inc" with Provider ID 1133378.



# Comparison View

The screenshot shows a web application interface for comparing providers. The browser address bar indicates the URL is localhost:8501/streamlit-webapp/. The interface has a sidebar on the left with four navigation icons: Home, Comparison (highlighted with a red box), Summary, and Watch List. The main content area is titled "KPI Filter" and includes a "Data Category" dropdown set to "Quality of Care" and a "KPI" dropdown set to "Select KPI". Below these are buttons for "Auto-select KPIs" and "Clear KPIs". Four KPI categories are listed: FAILED\_RCT\_RCT, FAILED\_CROWNS\_CORE, FAILED\_FILLINGS\_FILLING, and FAILED\_CROWNS\_CROWN. A descriptive paragraph explains the "Comparison of Selected Providers" feature, stating it displays KPI information and a radar chart showing ranking percentages. Below this are two charts: a radar chart comparing three providers across four KPI categories, and a bar chart showing normalized KPI values for the same categories. A checkbox "Click to Show Values" is present below the charts. At the bottom, there are two more descriptive paragraphs: "Hover over Text for More Information on Providers" and "Selected Provider Compared to Outlying Providers in Peer Group for Each KPI - Hover for More Information".

**Comparison of Selected Providers - Hover for More Information** Displays the KPI information for the selected provider(s). The radar chart shows the ranking percentage until you click the checkbox. When checkbox clicked exact values are shown. Hover over endpoint to see more detailed information.

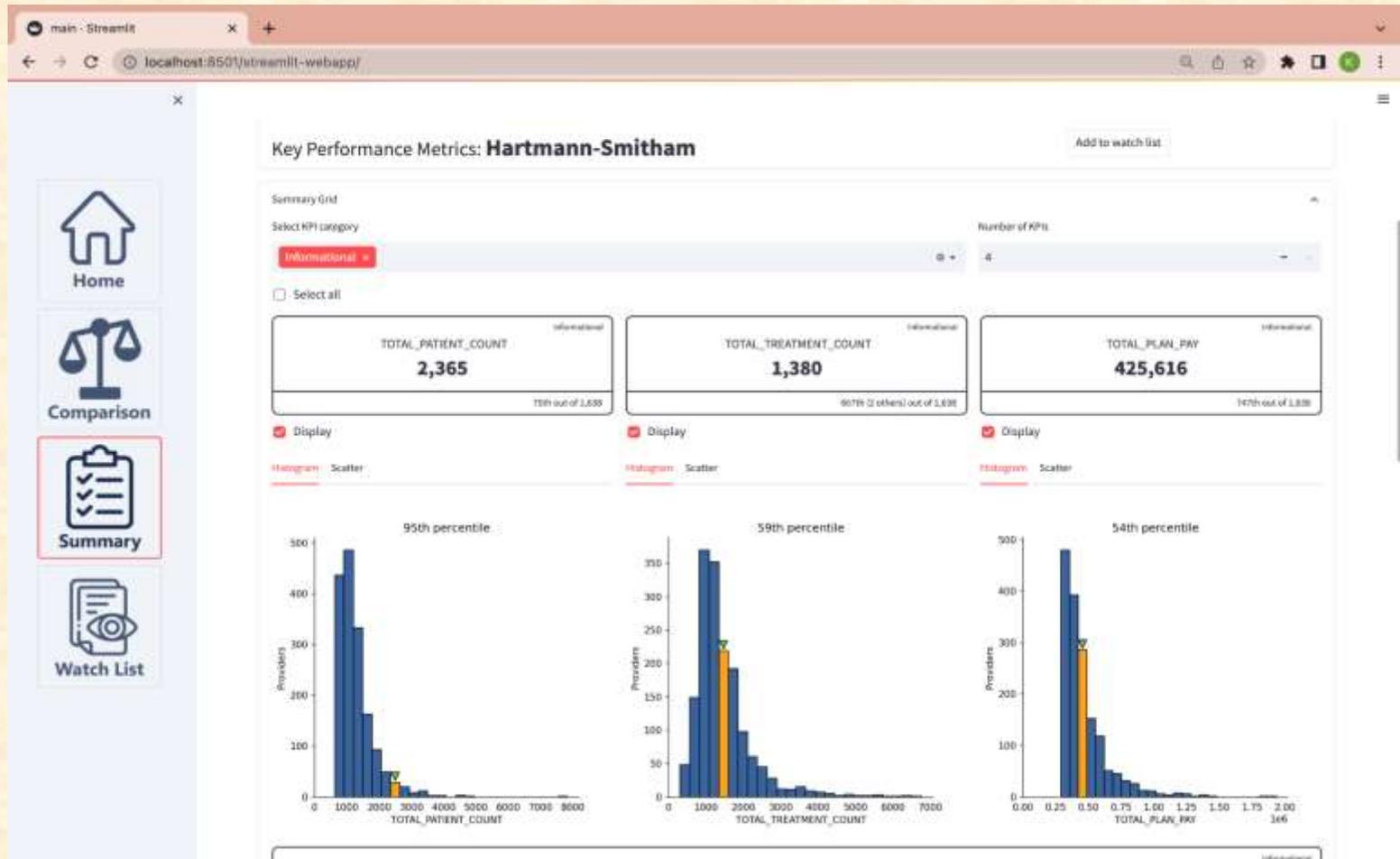
Click to Show Values

**Hover over Text for More Information on Providers**

**Selected Provider Compared to Outlying Providers in Peer Group for Each KPI - Hover for More Information**



# Summary View



# Watch List View

The screenshot shows a web browser window with the URL `localhost:8591/streamlit-webapp/`. The application has a sidebar on the left with four navigation options: Home (house icon), Comparison (scales icon), Summary (clipboard icon), and Watch List (document with eye icon, which is highlighted with a red border). The main content area is titled "Watch List" and contains two data tables.

**Claim Data Table:**

CLAIM_ID	BUSINESS_NAME	BUSINESS_TAX_ID	CHECK_ISSUE_DATE	PROCEDURE_CODE	PLAN_PMT_AMT	CLAIM_STATUS	CLAIM_STATUS_DESC	CURT_NUM	FROM_TOOTH_CODE	LICENS
0	"Langworth, Niklaus and Ross"	140796643	2020-06-18	D7922	57.6000	PD	Paid	460	29	68636
3	"Hoppe and Sons"	473758554	2020-06-10	D0140	66.6000	PD	Paid	5360	99A	74798
2	"Zulauf, Wolff and Andersen"	948841833	2020-05-23	D1110	-32.2000	PD	Paid	5627	99A	432
17	"Imry, Daniel and Hirsch"	166579481	2020-04-19	D0801	50.4000	PD	Paid	6150	J	97303
13	"Purdy, Guskowski and Jendr"	428967829	2020-04-22	D0801	30.3000	PD	Paid	7713	12	63736
13	"Roch and Sons"	981631278	2020-11-21	D0383	32.5000	PD	Paid	5609	20	71648
23	"Hermann, Hazel and Rau"	423330389	2020-01-31	D9981	44.5000	PD	Paid	7947	5	12239
07	"Spencer, Wolf and Boehm"	901612438	2020-01-27	D5885	12.6000	PD	Paid	8008	T	70588
03	"Marvin, Paucok and Hill"	285241812	2020-07-13	D2957	21.0000	PD	Paid	2970	F	88095
34	"Sharahan, Williamson and Prior"	605103185	2021-12-14	D2150	31.3000	PD	Paid	7469	15	70813

**Informational Data Table:**

<input type="checkbox"/> State	City	Provider	Provider ID	Peer Group	Risk Score	Total Plan Pay	Total Service Date	Total Patient C...	Total Treatment
<input type="checkbox"/> MI	Lansing	"Davis, Webster ...	1125040	5	8	285123.89	173	2844	1357
<input type="checkbox"/> MI	Berlin Creek	Munze LLC	1127680	5	9	527403.29	214	1388	1401
<input type="checkbox"/> MI	Detroit	Ledner Inc	1130078	3	9	138270.4	240	838	678
<input type="checkbox"/> MI	Farmington	"Waters, Strama...	1131313	1	8	22907.96	81	325	147

Below the tables are three buttons: "Delete", "Generate CSV", and "Generate PDF".



# What's left to do?

- Features
  - Backend Indexing
  - Snowflake
- Other Tasks
  - Optimization
  - Style Changes
    - Roosevelt colors on plots
    - PDF export changes
    - Text formatting
  - Refactor Code



# Questions?

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