Leveraging Custom Al Solutions for California Department of Finance





09/26/2024

About My Custom Al

- Presenter: Dr. Amine Allouah, My Custom Al co-founder
 - PhD in Applied Mathematics and Computer Science from Columbia University
 - Former Meta Engineer Led development of custom algorithms enhancing team efficiencies







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- My Custom Al
 - **Our Focus**: Crafting end-to-end custom AI solutions to tackle specific organization challenges
 - **Our Team**: Comprised of experts from Tech companies and leading Silicon Valley innovators
 - **Our Goal**: Leveraging AI to unlock new opportunities and drive efficiency in organizations

Outline of the presentation

- 1. Overview of challenges
- 2. Relevant past/current use cases
- 3. Proposed solutions
- 4. Benefits and Risks

Overview of Challenges

Challenge 1: Streamline Legislative Research and Analysis

• **Problem**: High volume of legislative bills requires thorough fiscal and policy analysis, competing with urgent budget tasks

• Need: Support staff by automating the extraction and validation of relevant background and fiscal data to support analysts in creating accurate, timely analyses

DEPARTMENT OF FINANCE BILL ANALYSIS

BILL NUMBER AR 2885

AUTHOR: Bauer-Kahan Rebecca

AMENDMENT DATE: 04/18/2024 POSITION: Neutral

BILL SUMMARY: Artificial intelligence.

This bill defines "artificial intelligence" in California law.

FISCAL SUMMARY

This bill does not create any additional costs to the state.

COMMENTS

The Department of Finance is neutral on this bill that defines "artificial intelligence" without additional costs to the state.

Several codes in current law include references to "artificial intelligence," including Business and Professions Code, Education Code, Public Resources Code, and Government Code. However, "artificial intelligence" is not defined in any of these codes.

This bill adds the following definition of "artificial intelligence" to the Government Code and cross references the definition in other sections of law.

*Artificial intelligence" means an engineered or machine-based system that varies in its level of autonomy and that can, for explicit or implicit abjectives, inter from the input it receives how to generate outputs that can influence physical or virtual environments.

This definition was donted using a definition from the Organization for Economic Co-operation and Development. The Department of Technology notes that the definition of "artificial intelligence" used by the National institute for Standards and Technology (NST) is preferable as many of the statist" information interindicy definition are band on those used to NST. A de many of the statist" information interindicy definition are band on those used to NST. A de Manual section 41817.2, would better argin with state statute if the statutory definition were based on NST definition, as well.

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Code/Department					Thousands)	nousands)
Agency or Revenue Type	CO RV	PROP 98	FC	2024-2025 FC	2025-2026 FC	Fund 2026-2027 Code
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Overview of Challenges

Challenge 2: Identify Statewide Efficiency Opportunities through Budget Change Proposal (BCP) Analysis

• **Problem**: BCPs must be analyzed for trends and shared resource opportunities across departments and fiscal year(s)

• **Need**: Al-driven insights to support analysts in uncovering patterns, forecasting needs, and maximizing efficiency across state resources.

Fiscal Year 2024-25	Business Unit Num 7100		Department Employment Development Department	
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must sign.				
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- 1. Overview of challenges
- 2. Relevant past/current use cases
- 3. Proposed solutions
- 4. Benefits and Risks

Relevant past/current use cases

1. Large Scale AI-Powered Document Processing and Quality Control

2. Cost-Effective Data Consolidation for Business Insights

3. Generative AI for Marketing Analytics and Insights

Al-Powered Document Processing and Quality Control Goal

- Collaborating with a book publishing company that has millions of scanned historical books
- Enable accurate and cost-effective restoration of these books, ensuring high-quality reprints and digital versions

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Problem

- Public technologies (Google, Microsoft) are cost-prohibitive for large-scale historical book restoration (3M)
- Custom extraction needed and not supported by existing solutions

AI-Powered Document Processing and Quality Control

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down that a doubt has no claim to consideration unless it is a reasonable doubt; i.e., a doubt which is based on some fact or circumstance that might be used as evidence to establish a contrary conclusion. The appeal must be to actual experience. If it can be shown from experience that observation under the circumstances in question is frequently unreliable, or that the accused had acted in ways that might be taken as evidence of temporary aberration, the doubt becomes reasonable, since it has specific evidence to stand on. Unless such doubt can be eliminated by further investigation, the conclusion is not fully established, but remains, at best, a matter of probability. Proof requires the removal of reasonable doubt, and the truth of a suggestion or idea consists in its ability to organize all the relevant facts into a body of evidence to the exclusion of reasonable doubt.

So far no reference has been made to the distinction between induction and deduction. Perhaps the impression given by the preceding discussion is to the effect that a disproportionate emphasis and importance has been given to deduction. In scrutiny and explanation the finding of relevant facts becomes an occasion for deduction, while in prediction and verification the process is obviously deductive in character. Where, then, does induction find a place? Does this mean that the time-honored distinction between induction and deduction must be discarded?

Whether the distinction be retained or not, it is

Custom AI

1,200 pages/hour 97% accuracy

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Our current solution costs 90% less than public solutions with similar accuracy

Relevant past/current use cases

1. Large Scale AI-Powered Document Processing and Quality Control

2. Cost-Effective Data Consolidation for Business Insights

3. Generative AI for Marketing Analytics and Insights

Cost-Effective Data Consolidation for Business Insights **Problem**

- A large-scale data aggregator collects vast amounts of pricing data with many variations of the same items across regions, making consolidation difficult
- Small errors in item grouping can lead to inaccurate business insights, such as flawed inflation or regional price analysis

Cost-Effective Data Consolidation for Business Insights



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Solution

- Provide a scalable, cost-effective AI solution to ensure accurate price comparisons and reliable business insights.

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Solution

- Provide a scalable, cost-effective AI solution to ensure accurate price comparisons and reliable business insights.

Our current solution costs 100X less than most accurate solutions with 1% less accuracy

Relevant past/current use cases

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Automatic Parsing of different datasets

Validation of Information Accuracy Summarizes and Prioritizes Content

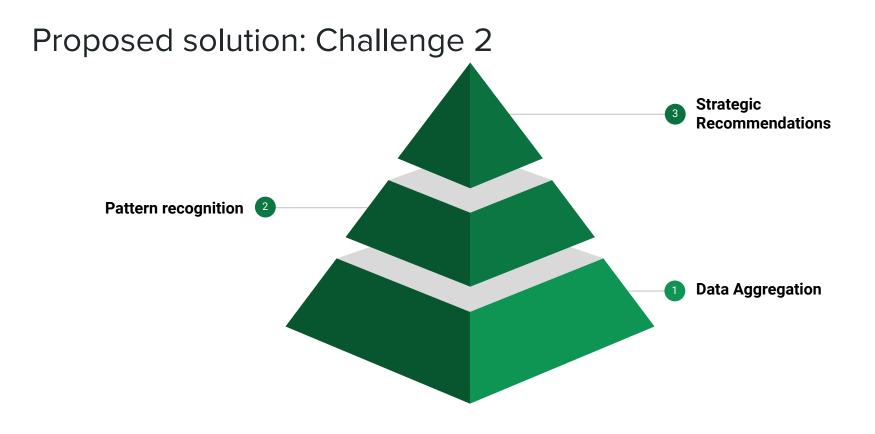
Automatic Parsing of	Validation of Information	Summarizes and Prioritizes	
different datasets	Accuracy	Content	

- Other previous analyses/studies
- Other programs (public or private) or laws (state or federal).
- Historical Finance recommendations

=> Similar Al-Powered Document Processing and Quality Control

Automatic Parsing of different datasets	Validation of Information Accuracy	Summarizes and Prioritizes Content
- Other previous analyses/studies	- Cross reference datasets	
- Other programs (public or private) or laws (state or federal).	- Ranking system	
- Historical Finance recommendations		
=> Similar AI-Powered Document Processing and Quality Control	=> Similar to Data consolidation use case	

Automatic Parsing of different datasets	Validation of Information Accuracy	Summarizes and Prioritizes Content
- Other previous analyses/studies	- Cross reference datasets	- Given a specific analyst issue, summarize and prioritize the
- Other programs (public or private) or laws (state or federal).	- Ranking system	content
- Historical Finance recommendations		-This step relies on the previous blocks
=> Similar AI-Powered Document Processing and Quality Control	=> Similar to Data consolidation use case	



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Benefits and risks of applying AI

Challenge	Feasibility	Risks	Benefits of Applying AI
1	Yes	Medium	High
2	Yes	High	Medium

Benefits and risks of applying AI

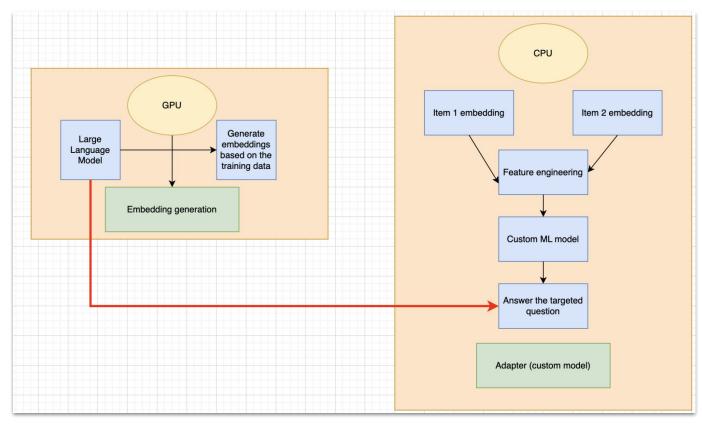
Challenge	Feasibility	Risks	Benefits of Applying AI
1	Yes	Medium	High
2	Yes	High	Medium

- **Challenge 1 risks:** Quantification tasks (like impact estimation) current GenAl solution are not good, need very custom approaches.
- Challenge 2 risks: The amount of data, e.g. hundreds of BCPs per year

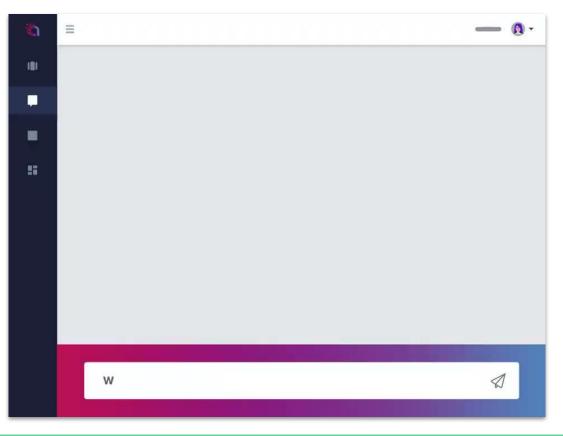
Q&A Session

Backup slides

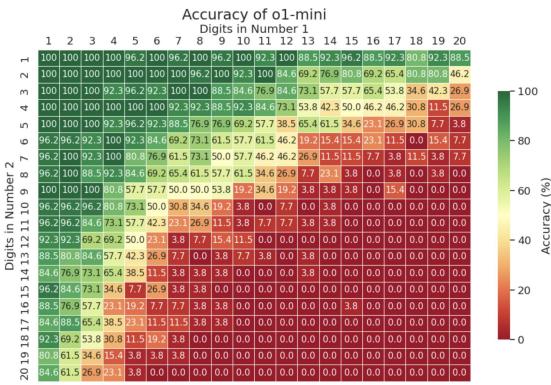
Cost-Effective Data Consolidation for Business Insights



Generative AI for Marketing Analytics and Insights



LLM performance at multiplication



Credits to Prof. Yuntian Deng Link

My Custom AI: Process

Our Process

1. Discovery

In an initial workshop, we learn about your use case and determine its feasibility.

2. Scope

We translate your custom needs into requirements, identify the ideal Al approach and agree on measurable goals and timeline.

-

4. Deploy

We deploy your custom AI solution into your production environment, in the cloud, on a mobile app or other framework.

5. Optimize

We monitor feedback and make improvements based on production usage and results.

<u>'@'</u>

3. Prototype

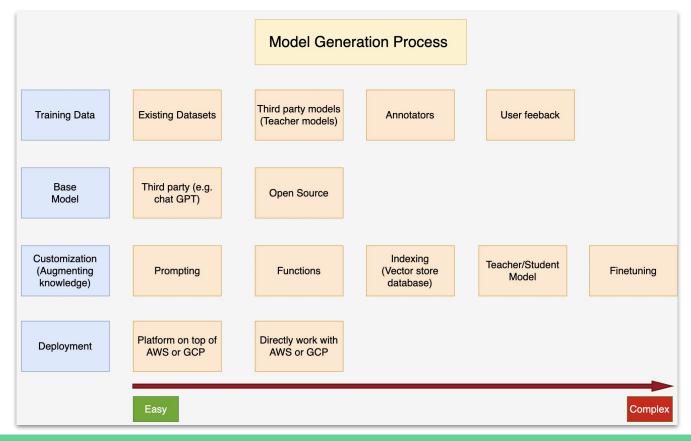
We deliver a product prototype, training a custom model on a set of mutually agreed training data.



6. Hand-off

We show your development team how to use, monitor and improve your solution.

My Custom AI: End to End model customization



My Custom AI Services

• Al Feasibility Study:

- Identify if a use case is feasible using AI and the potential risks.
- If it is feasible, identify different approaches and their tradeoffs.

• Al Development & Deployment:

- Training Data generation and annotation
- Model: Customization, measurement and optimization
- Deployment on the partner infrastructure.

• Al Professional Training:

- Workshops regarding a specific area in AI.
- Brainstorming session on how AI can be applied internally.