MINDLAYER

Enhancing Citizen Services

Exploring the Large Language Models in Improving Interaction with Citizens

10 January 2024

About US

Mindlayer provides a seamless and AI-powered customer service solution that leverages its premium Natural Language Processing (NLP) engine and trilingual ChatBot Technology.

Delivered 100+ projects

Successfully completed 100+ projects, gaining valuable experience across various industries.

Resolved 3M+ Enquiries per year

Leverage AI/NLP-powered solutions to address end user's enquiries thru Chatbot and Voicebot technology

15+ Trusted Clients from Enterprise/Gov

Delivering exceptional results with tailored solutions for enterprise and government sectors. E.g. 1823, HHB, IRD, etc

Strong Track Records

Cyberport Incubatee Program (2018)
CityU HK Tech 300 Angel Fund, TSSSU

Agenda | Large Language Model Platform (LLMP)

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1. Challenges in Public Service
2. Existing AI Solutions
3. New Era of AI - LLM
4. Summary

Challenges in Public Services

Challenges in Public Services

Increasing challenges for **addressing public inquiries** include **high call volumes**, **limited hours**, and **high expectations** from users and senior officials

Additional resources are required to manage surges in call volumes during peak periods, such as tax season. (**Increase 70% inquiries**)

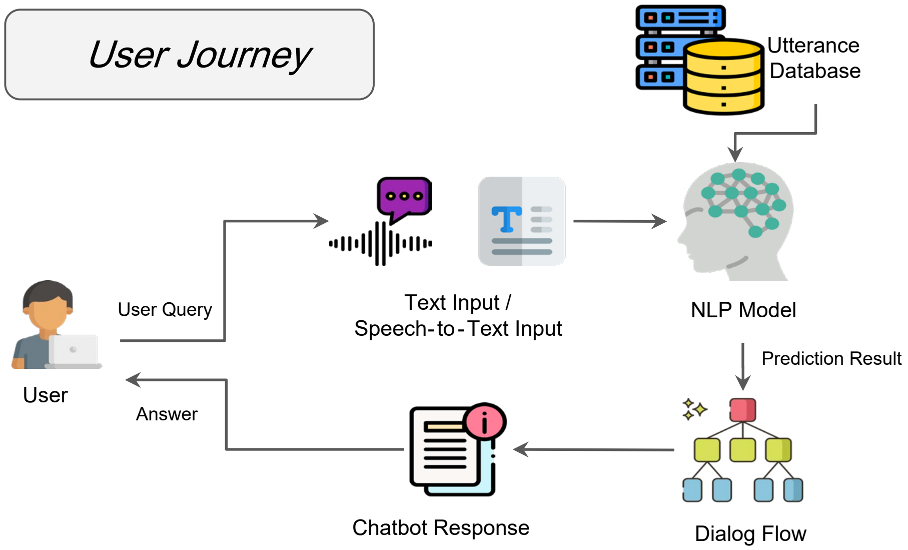
Increased expectation by the end users since they would expect a scenario-based question can be catered rapidly

Limited service availability during non-office hour. **31% of the inquiries** come from non-office hour

Existing AI Solutions for Public Services

Existing Solutions, e.g. **Chatbot** , are often built on top of NLP Model, such as **BERT*, pre-trained with numerous data in a deep learning neural network.

Strong at **specific task, e.g. detect the intention of the user enquiries.**



User Journey

Utterance Database

User Query

Text Input / Speech-to-Text Input

NLP Model

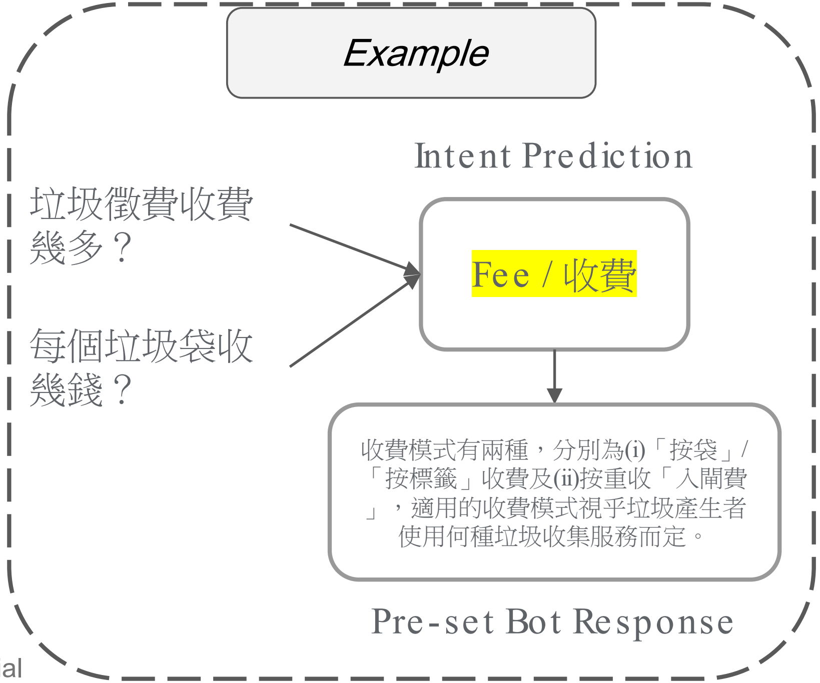
Prediction Result

User

Answer

Chatbot Response

Dialog Flow



Example

Intent Prediction

垃圾徵費收費幾多？

每個垃圾袋收幾錢？

Fee / 收費

收費模式有兩種，分別為(i)「按袋」/「按標籤」收費及(ii)按重收「入閘費」，適用的收費模式視乎垃圾產生者使用何種垃圾收集服務而定。

Pre-set Bot Response

*BERT: *Bidirectional Encoder Representations from Transformers*

NLP Chatbot / Voicebot

Pros:

1. Easy to control how the Chatbot responds to the enquiry.
2. Good performance on the domain-specific task

Cons:

1. Require more effort to change or extend scope once implemented *comparing to LLM solution*
2. Reliant on the data used to train the NLP model, which can lead to time-consuming data collection and pre-procession.

New Era of AI Solution – *Large Language Model (LLM)*

Generative AI and Large Language Model (LLM)

A year ago, **ChatGPT** had brought **Generative AI** to widespread public attention. The foundational technology, **Large Language Model (LLM)**, becomes pivotal in addressing the challenges.

1. **Natural Language Processing**: LLM excels in understanding and generating human-like text, enhancing communication efficiency.
2. **Better Performance with Less Effort**: LLM-based Chatbot requires a significantly shorter development timeframe because less data is required and the fine-tuning process is simplified.
3. **Advanced Capabilities**: LLM supports multiple languages already without further fine-tuning.

Comparison | Existing AI Solution vs LLM Solution

Existing AI Solution

☑ Easy control over Chatbot responses

☑ Effective performance on the domain-specific task

☑ Consistent responses

LLM Solution

☑ Dynamic responses

☑ Creative problem solving, such as generative responses, suggestions etc.

☑ Significantly reduced development timeframe

Suitable Use Cases for Public Services

Intent-based Chatbot
(e.g. FAQs)
Flow-based Chatbot
(e.g. Form-filling)

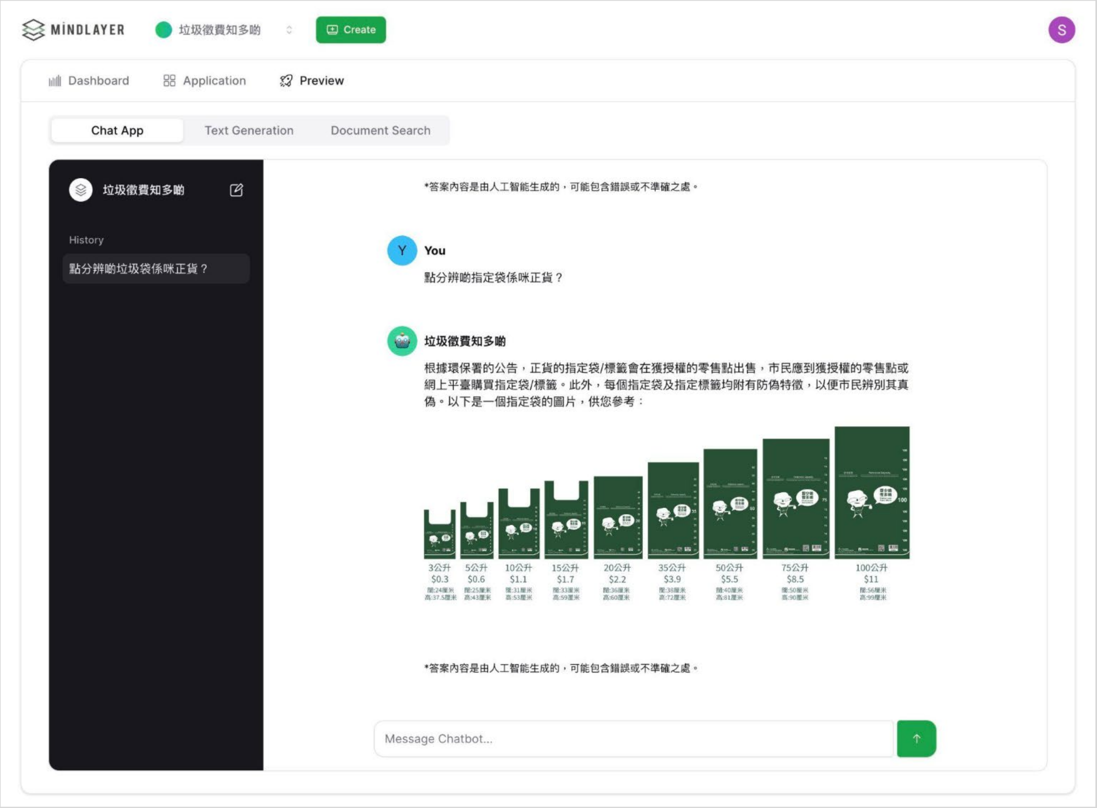
Generative AI Chatbot
(FAQs / Scenario-based Q&A)

Text Generation / Summary

Scenario-based search engine

Potential / Successful Use Case

- **Advanced Chatbot / Voicebot with minimised training effort**
- Summary of information from Gov websites
- Advanced search engine
- And many more…



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Create
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Dashboard
Application
Preview
Chat App
Text Generation
Document Search
垃圾徵費知多啲
History
點分辨啲垃圾袋係咪正貨？

*答案內容是由人工智能生成的，可能包含錯誤或不準確之處。

You

點分辨啲指定袋係咪正貨？

垃圾徵費知多啲

根據環保署的公告，正貨的指定袋/標籤會在獲授權的零售點出售，市民應到獲授權的零售點或網上平臺購買指定袋/標籤。此外，每個指定袋及指定標籤均附有防偽特徵，以便市民辨別其真偽。以下是一個指定袋的圖片，供您參考：

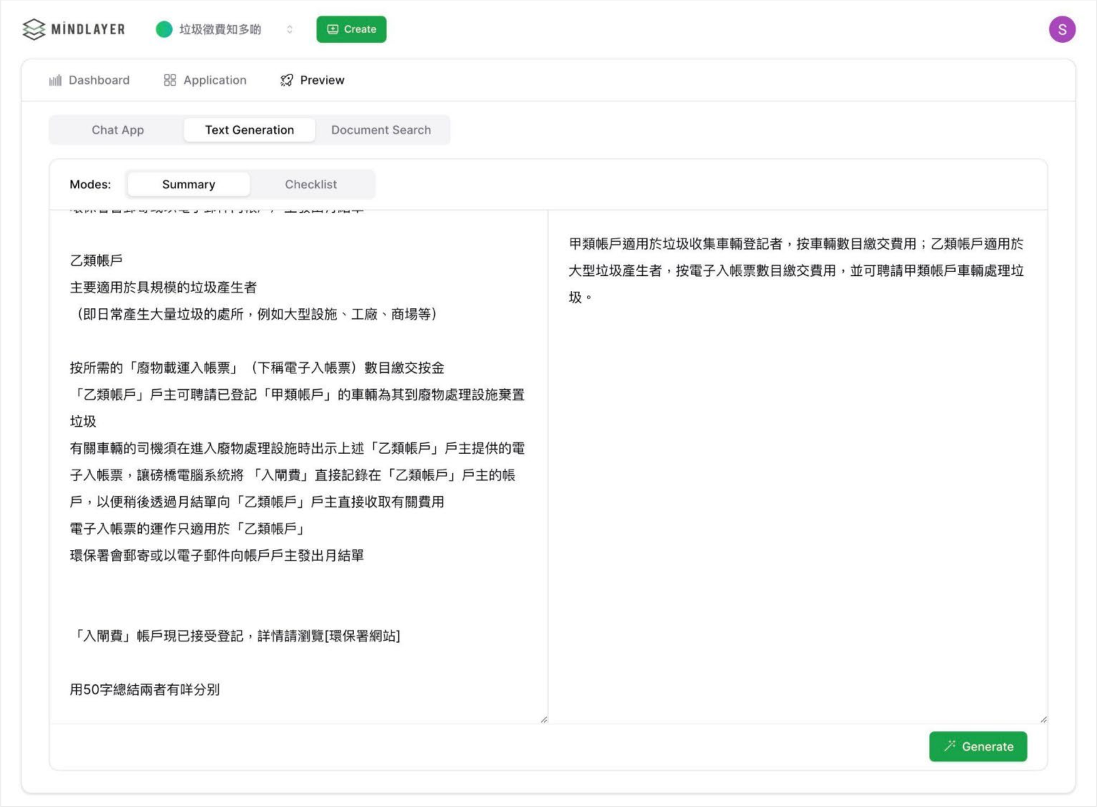
3公升 $0.3 闊:24厘米 高:37.5厘米
5公升 $0.6 闊:25厘米 高:43厘米
10公升 $1.1 闊:31厘米 高:53厘米
15公升 $1.7 闊:33厘米 高:59厘米
20公升 $2.2 闊:36厘米 高:60厘米
35公升 $3.9 闊:38厘米 高:72厘米
50公升 $5.5 闊:40厘米 高:81厘米
75公升 $8.5 闊:50厘米 高:90厘米
100公升 $11 闊:56厘米 高:99厘米

*答案內容是由人工智能生成的，可能包含錯誤或不準確之處。

Message Chatbot...

Potential / Successful Use Case

- Advanced Chatbot / Voicebot with minimised training effort
- **Summary of information from Gov websites**
- Advanced search engine
- And many more…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Create
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Preview
Chat App
Text Generation
Document Search
Modes:
Summary
Checklist
Generate

乙類帳戶
主要適用於具規模的垃圾產生者
（即日常產生大量垃圾的處所，例如大型設施、工廠、商場等）

按所需的「廢物載運入帳票」（下稱電子入帳票）數目繳交按金
「乙類帳戶」戶主可聘請已登記「甲類帳戶」的車輛為其到廢物處理設施棄置垃圾
有關車輛的司機須在進入廢物處理設施時出示上述「乙類帳戶」戶主提供的電子入帳票，讓磅橋電腦系統將 「入閘費」直接記錄在「乙類帳戶」戶主的帳戶，以便稍後透過月結單向「乙類帳戶」戶主直接收取有關費用
電子入帳票的運作只適用於「乙類帳戶」
環保署會郵寄或以電子郵件向帳戶戶主發出月結單

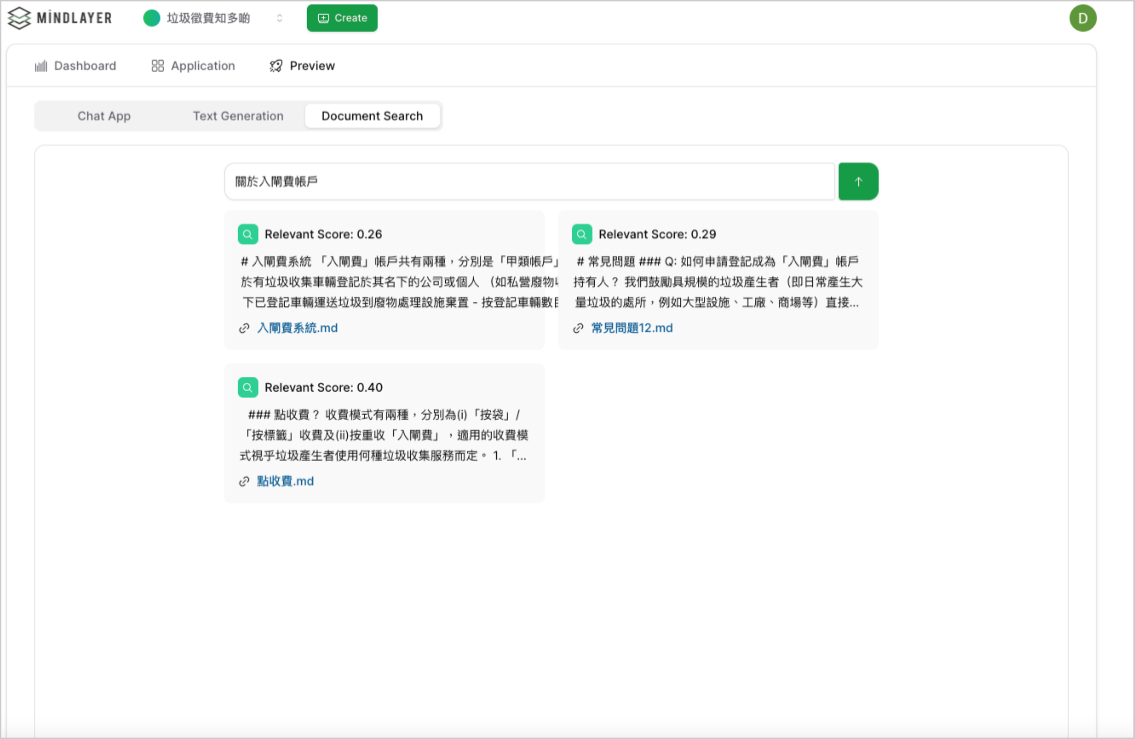
「入閘費」帳戶現已接受登記，詳情請瀏覽[環保署網站]

用50字總結兩者有咩分別

甲類帳戶適用於垃圾收集車輛登記者，按車輛數目繳交費用；乙類帳戶適用於大型垃圾產生者，按電子入帳票數目繳交費用，並可聘請甲類帳戶車輛處理垃圾。

Potential / Successful Use Case

- Advanced Chatbot / Voicebot with minimised training effort
- Summary of information from Gov websites
- **Advanced search engine**
- And many more…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Document Search

關於入閘費帳戶

Relevant Score: 0.26

入閘費系統 「入閘費」帳戶共有兩種，分別是「甲類帳戶」 於有垃圾收集車輛登記於其名下的公司或個人 （如私營廢物 下已登記車輛運送垃圾到廢物處理設施棄置 - 按登記車輛數

入閘費系統.md

Relevant Score: 0.29

常見問題 ### Q: 如何申請登記成為「入閘費」帳戶持有人？ 我們鼓勵具規模的垃圾產生者（即日常產生大量垃圾的處所，例如大型設施、工廠、商場等）直接...

常見問題12.md

Relevant Score: 0.40

點收費？ 收費模式有兩種，分別為(i)「按袋」/「按標籤」收費及(ii)按重收「入閘費」，適用的收費模式視乎垃圾產生者使用何種垃圾收集服務而定。 1. 「...

點收費.md

Problems when using ChatGPT

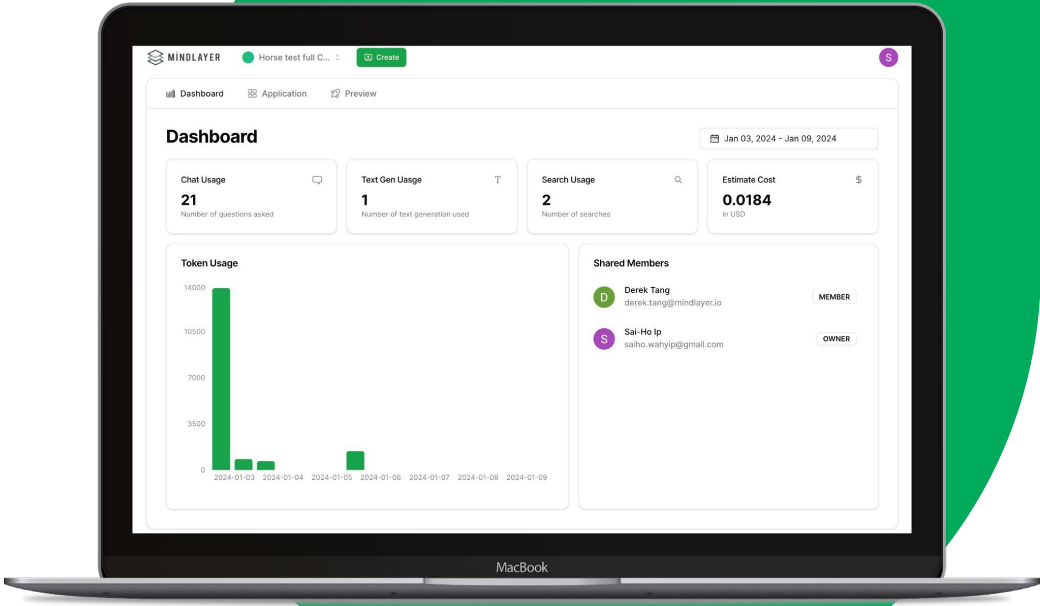
Major limitations when using ChatGPT

- **Not officially support in HK**
  Using VPN is just a bypass, but not a long-term solution
- **Security Concern**
  Concern on the sensitive data leakage on Cloud-based solution
- **Factuality and Knowledge**
  Knowledge is static, absence in both domain and in-house specific knowledge.

Overview - Mindlayer Large Language Model Platform (MLMP)

An **all-in-one solution** designed to efficiently manage inquiries and emergency calls, while simplifying the process of locating the appropriate information.

- **AI Search powered by LLM**
  Powerful AI search engine & provide relevant information from your own knowledge base
- **Automated Chatbot**
  Provide the round-the-clock service and preliminary answer with references via AI model from your own dataset.
- **Text Generator**
  Able to generate the summary, report, or checklist from voice call or documents



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2024-01-06
2024-01-07
2024-01-08
2024-01-09
MacBook

Dashboard

Jan 03, 2024 - Jan 09, 2024

Chat Usage
21
Number of questions asked

Text Gen Uasge
1
Number of text generation used

Search Usage
2
Number of searches

Estimate Cost
0.0184
in USD

Shared Members

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MEMBER

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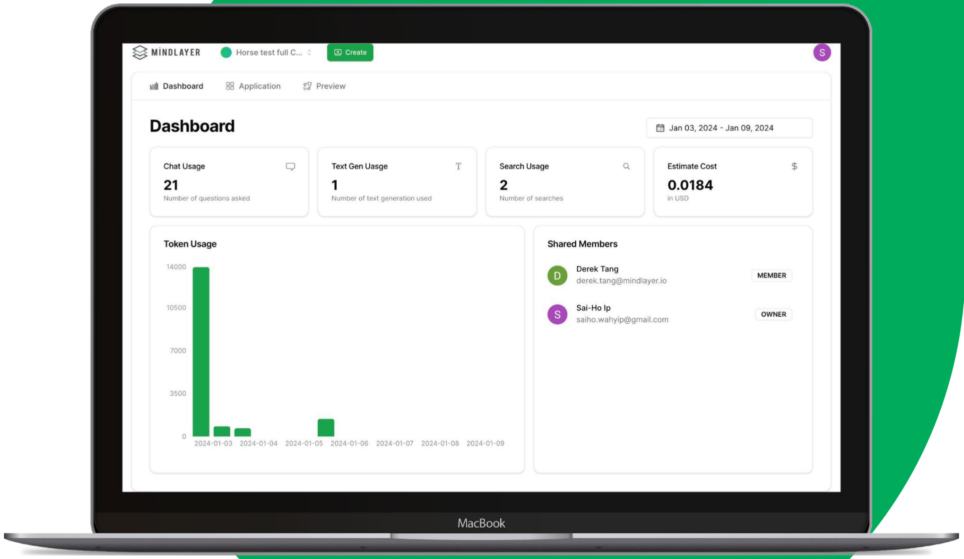
OWNER

Overview - Mindlayer Large Language Model Platform (MLMP)

Build LLM Apps in minutes.

- VPN is not required
- **On-premise/On-Cloud Deployments**
- Integration with your own dataset
- Enterprise Features
- **Support of different LLMs**

And more…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2024-01-08
2024-01-09

Shared Members

D	Derek Tang derek.tang@mindlayer.io	MEMBER
S	Sai-Ho Ip saiho.wahyip@gmail.com	OWNER

Summary: Key Takeaways

Challenges in Public Services

- More citizen’s inquiries and higher expectation on public services
- Additional resources required for special situations
- Limited service availability during non-office hour
- Every citizen has unique situation and problem

Leverage LLM to Solve the Problems

- **Chatbot** – Round-the-clock service, better NLU and Accuracy
- **Text Generator** – Generate summary /report from your sources easily
- **AI Search (LLM)**– Provide relevant information from various sources easily even the enquiry is complex and scenario-based

Thank You.

Contact us:

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Company Profile

MINDLAYER | Trusted by leading brands and entreprises

Government

1823

香港天文台
HONG KONG OBSERVATORY

屋宇署
BUILDINGS
DEPARTMENT

醫務衛生局
Health Bureau

稅務署
Inland Revenue
Department

Office of the Government Chief Information Officer
政府資訊科技總監辦公室

Financial Industry

DBS

Manulife

PRUDENTIAL
英國保誠

Transportation

MTR

香港電車
HK TRAMWAYS
EST. 1904

Others

香港賽馬會
The Hong Kong
Jockey Club

遙距營商計劃
D-Biz

BGCA
香港小童群益會
The Boys' & Girls' Clubs Association of Hong Kong

Recognition & Partnership

Red Hat

HK TECH 300

DBS Accelerator
POWERED BY nest
DBS
APPLICATIONS CLOSE JUN 8TH, 2016

Hewlett Packard
Enterprise

Google

Microsoft