

# A Conversational AI Platform for Educating and Supporting Behavioral Change in Pregnant Women Diagnosed with Gestational Diabetes Mellitus

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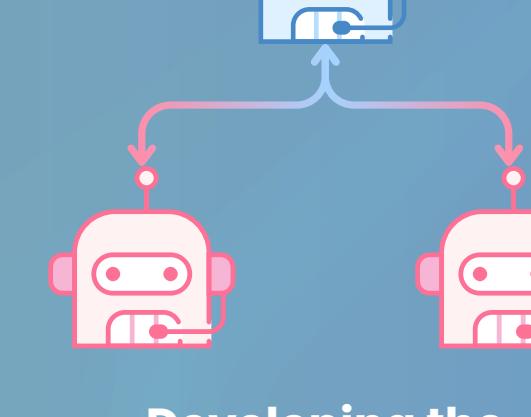


## Objectives

- 1 develop a **Multi-Agent platform** that provides education and supports behavioral change for pregnant women diagnosed with gestational diabetes mellitus
- 2 develop a **Passive Conversational Agents** that provides accurate and reliable health and nutrition information for pregnant women diagnosed with gestational diabetes mellitus
- 2 develop an **Active Conversational Agents** that supports behavioral self-management by calculating carbohydrate intake from meals and sending reminders for blood glucose monitoring.

## Methodology

### Pinecone



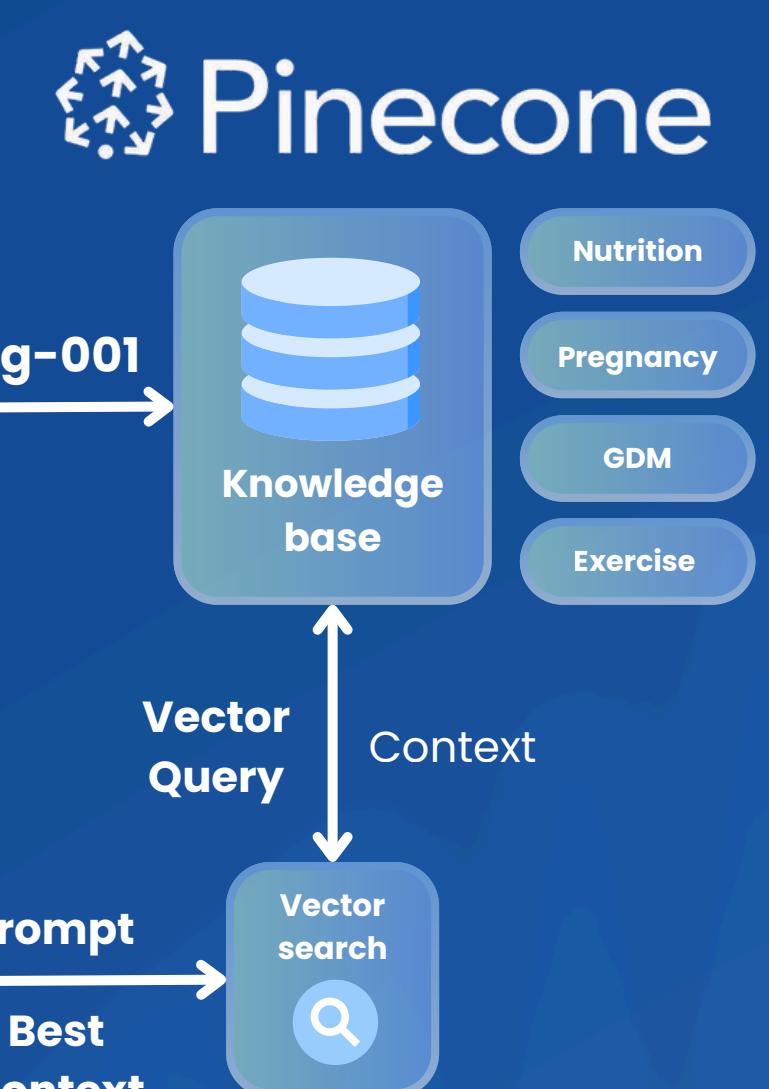
## Knowledge Base Preparation



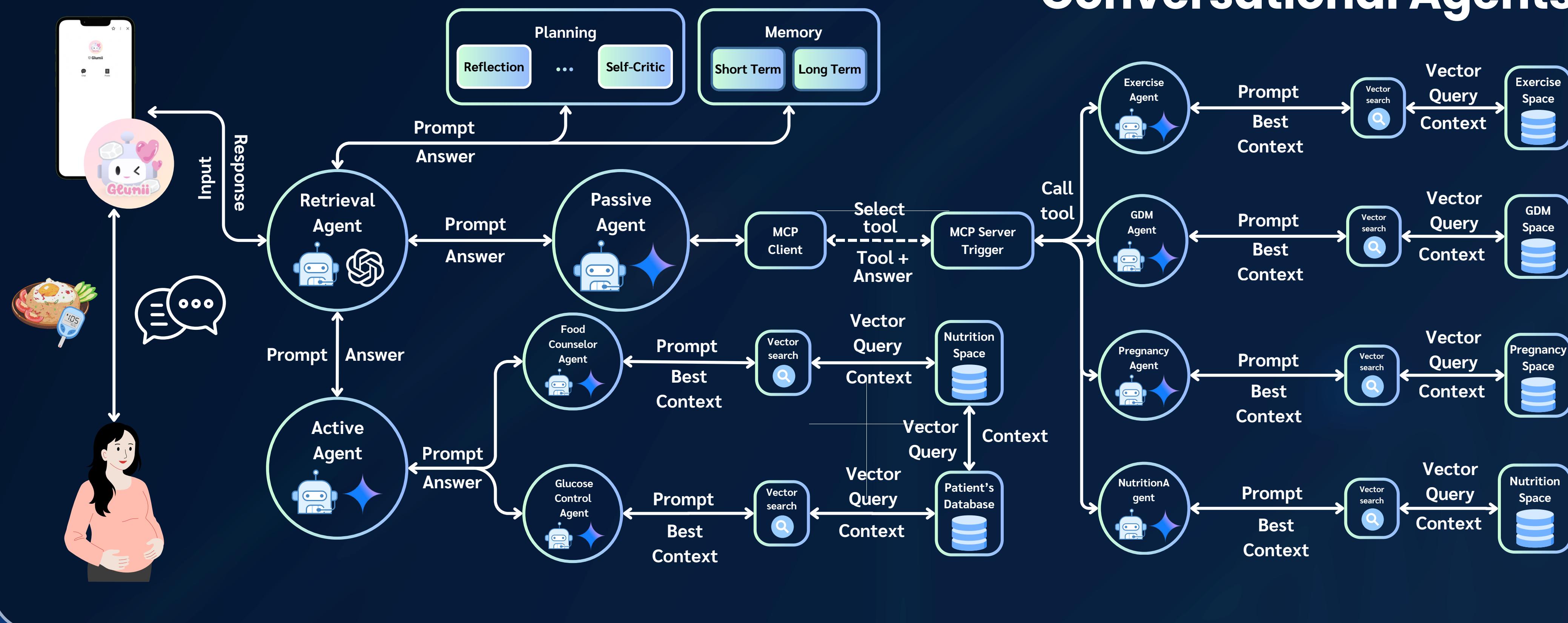
### Retrieval-Augmented Generation (RAG)[2]

is a technique that enhances LLM accuracy by retrieving relevant information from external knowledge sources before generating responses, helping reduce hallucination and improve factual reliability.

A Large Language Model (LLM)[1] is an AI system trained on massive text data to learn linguistic structure, word relationships, and contextual meaning.



## Conversational Agents



## Result

### Passive Conversational Agents

Method	topics	Accuracy Check	Accuracy percentage
75 questions	3 topics x 25 each	Accuracy Check True False	
GDM	25/25	100%	
Pregnancy	25/25	100%	
Nutrition	21/25	84%	

### Active Conversational Agents

Menus	Glumii (Carb)	Actual values (Carb)
Rad Na Moo	3.1	3.1
Kanom Babin	8	8
Khao Kha Moo	3.22	3.6
Seafood Suki	1.6	1.6
MSE	0.0361	

## Discussion and Conclusion

### Passive Conversational Agents

- GDM & Pregnancy: 100% accuracy
- Nutrition: 84% accuracy → diverse food items and preparation methods beyond the current scope of the knowledge base

### Active Conversational Agents

- Carbohydrate estimation: MSE = 0.0361 → small estimation error

### Next steps

- Add source attribution
- Analyze retrieval difficulty to guide database expansion

## References

- [1] Lewis, P., Perez, E., Piktus, A., Petroni, F., Karpukhin, V., Goyal, N., Kütterer, H., Lewis, M., Yih, W., Rocktäschel, T., Riedel, S., & Kiela, D. (2020). Retrieval-Augmented Generation for Knowledge-Intensive NLP Tasks (Version 4). arXiv. <https://doi.org/10.48550/ARXIV.2005.11401>
- [2] Naveed, H., Khan, A. U., Qiu, S., Saqib, M., Anwar, S., Usman, M., Akhtar, N., Barnes, N., & Mian, A. (2024). A Comprehensive Overview of Large Language Models. (No. arXiv:2307.06435). arXiv. <https://doi.org/10.48550/arXiv.2307.06435>
- [3] B.J. Fogg. (2003). Persuasive Technology. Elsevier. <https://doi.org/10.1016/B978-1-55860-643-2.X5000-8>