

# Consumer Price Index Chatbot

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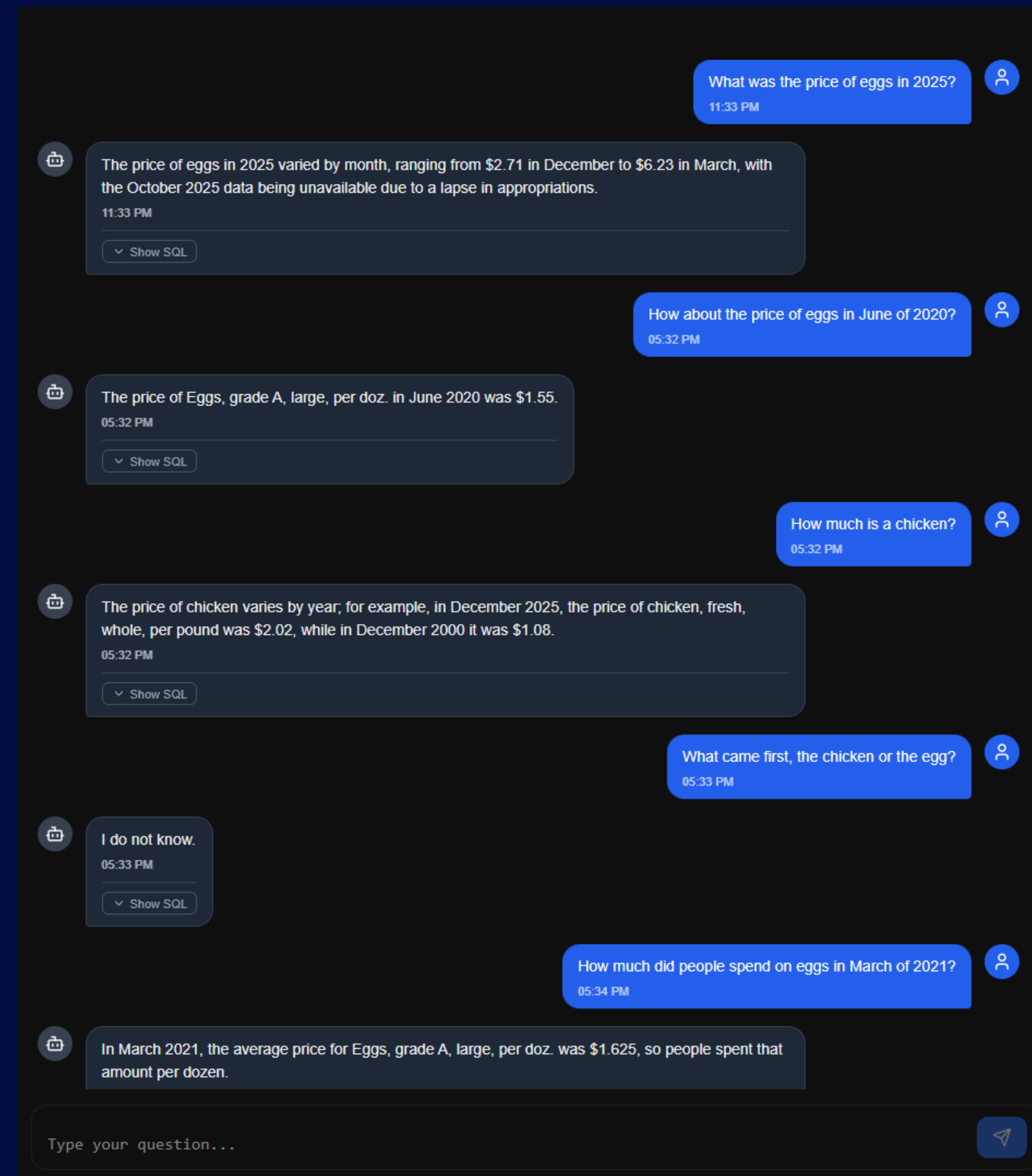
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## Introduction

The Consumer Price Index Chatbot is a large language model powered chatbot that uses retrieval-augmented generation to simplify analysis of the Consumer Price Index for the Federal Reserve Bank of Philadelphia. The chatbot is designed to provide answers using only information we have provide it from the Bureau of Labor Statistics' Consumer Price Index from 2000 through 2026.

The information utilized comes from the CPI Urban Consumers and CPI Average Prices data sets. The Urban Consumers data set provides average monthly spending by urban Americans on goods and services. The Average Prices data set provides monthly average prices for a particular good or service for a set unit amount or time.

When it is unable to provide a proper response based on the context that was provided, it will explicitly state that it cannot answer the question instead of hallucinating a response in an attempt to answer the question.



## Architecture

- Back end
  - Retrieval augmented generation using vector similarity to get accurate answers
  - Integrated LLM for chat functionality
- Front end
  - Simple chat interface to facilitate user queries and cleanly display chatbot responses
- Database
  - Stores Consumer Price Index data as text and vector embeddings
  - Saves user accounts and conversation history
- Amazon Bedrock
  - Embedding models used to convert text data into vector embeddings
  - Large language model used to take information and give appropriate responses

## Tools Used

- Front end: Vite & React JavaScript frameworks
- Back end: Python, FastAPI, PostgreSQL
- AI: AWS Bedrock

