PartSelect

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InstaLILY Case Study

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Technical Approach

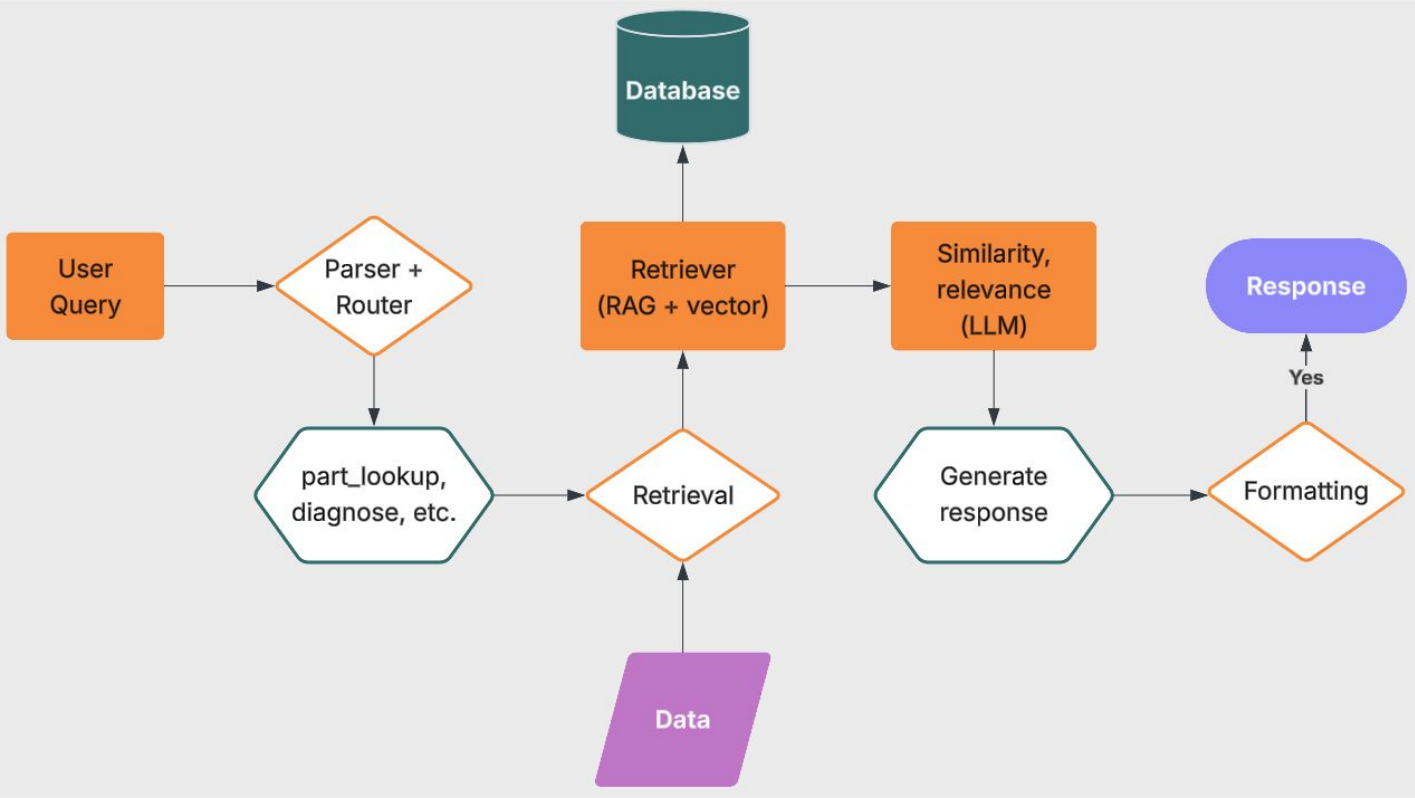
- LangGraph + Pydantic
  - Intent classification, retrieval orchestration
- Supabase (PostgreSQL)
  - Structured part / model database + vector similarity
- RAG
  - For efficient repair/symptom responses
- Web scraping (Selenium)
  - Fallback for real-time data

parts | models | repairs | NEW

Filter | Sort | Insert | RLS disabled | Role postgres | Realtime off | API Docs

id uuid	appliance_type text	symptom text	symptom_id text
0f02b8d0-95ec-423d-b332-8350e90e5c0	refrigerator	Ice maker not making ice	Not-Making-Ice
1a8fba8f-24e9-4c3f-bd3a-f431a9431fd0	dishwasher	Noisy	Noisy
25724557-989d-4fed-8958-df2b63fe9f7f	dishwasher	Will not dispense detergent	Will-Not-Dispense-Dete
285c330a-4bc4-436a-9da3-03aa9cfd1c6	refrigerator	Will not start	Will-Not-Start
2e18873f-03b5-4fd5-9267-bcab9d62b6ac	refrigerator	Not dispensing water	Not-Dispensing-Water
3b93cdbd-a64b-4621-ad1a-9a129896545	refrigerator	Freezer too cold	Freezer-Too-Cold
3ec3bb29-9540-4a56-bcb0-98e844e6e3	dishwasher	Will not fill with water	Will-Not-Fill-Water
447da5d8-72d4-488f-ae4d-dda7e528d32	dishwasher	Leaking	Leaking
4ba5d3c6-bb86-4941-8b5c-9271cf09278	refrigerator	Fridge too cold	Refrigerator-Too-Cold
648eaeb0-efc6-4172-884c-3c7b37f36054	refrigerator	Fridge and Freezer are too warm	Refrigerator-Freezer-To
6861bf07-65cd-41a0-98ab-3039960c103	refrigerator	Fridge runs too long	Running-Too-Long
79a2b853-189a-4cb4-aed7-f193f5b77b94	dishwasher	Not draining	Not-Draining
843e07ab-f1d2-4d92-b72f-b94ab5630e6	dishwasher	Not drying dishes properly	Not-Drying-Properly
8fe83c66-fb65-4ed1-8a11-df8836ffd40f	dishwasher	Will not start	Will-Not-Start
92731fd7-1451-4f1f-8fbb-1cddb05d21b1	refrigerator	Light not working	Light-Not-Working
9cc9d036-28d6-4114-a299-34714d0b34b	dishwasher	Door latch failure	Door-Latch-Failure
abeb22fd-fe9a-44a5-b160-e73579b852d	refrigerator	Door Sweating	Door-Sweating

supabase repairs table



Program Flow

Key Challenges

- GET Requests
  - PartSelect rejects all incoming requests
  - Selenium >> Playwright
- Repair blog ingestion and semantic indexing
- Tool routing inside <diagnose>
  - Built layers for fallback
- Prompt design for consistent Markdown formatting

Code Highlights

- Comprehensive <diagnosis> checking
  - Common issues detection
  - Semantic search on repair guides (JSON)
  - Brand specific search
  - LLM fallback
- Compatibility check (JS behavior)
- Recommends blog posts for fixes + intelligent summary for troubleshooting

```python
async def diagnose(state: AgentState) -> AgentState:
    """Diagnose an issue based on user input and provide repair guidance from Supabase"""
    user_message = state.get('latest_user_message', '')
    appliance_type = state.get('product_type', '')

    if not appliance_type:...

    general_inquiry_patterns = [...

    # Common issues detection
    is_general_inquiry = any(pattern in user_message.lower() for pattern in general_inquiry_patterns)
    if appliance_type and is_general_inquiry:...

    symptom_map = {...

    detected_symptoms = []
    for symptom, variants in symptom_map.items():...

    if appliance_type:...

    has_symptom = len(detected_symptoms) > 0

    # Enhance search query for better matching
    search_query = user_message
    if appliance_type and appliance_type not in user_message.lower():...

    # Add detected symptoms to search query if not already present
    for symptom in detected_symptoms:...

    # Determine if this is asking about parts
    is_parts_query = any(word in user_message.lower() for word in ["part", "parts", "replace", "fix", "repair"])

    # Supabase semantic search
    if appliance_type and has_symptom and is_parts_query:...

    # Semantic search on repair guides
    result = await repair_tools.search_repair_guides(...

    if result["success"] and result["guides"]:...

    analysis_result = await repair_tools.analyze_repair_query(user_message)

    # Search for specific brands
    if not result["success"] or not result["guides"]:...

    # LLM FALLBACK
    if analysis_result["success"]:...
```

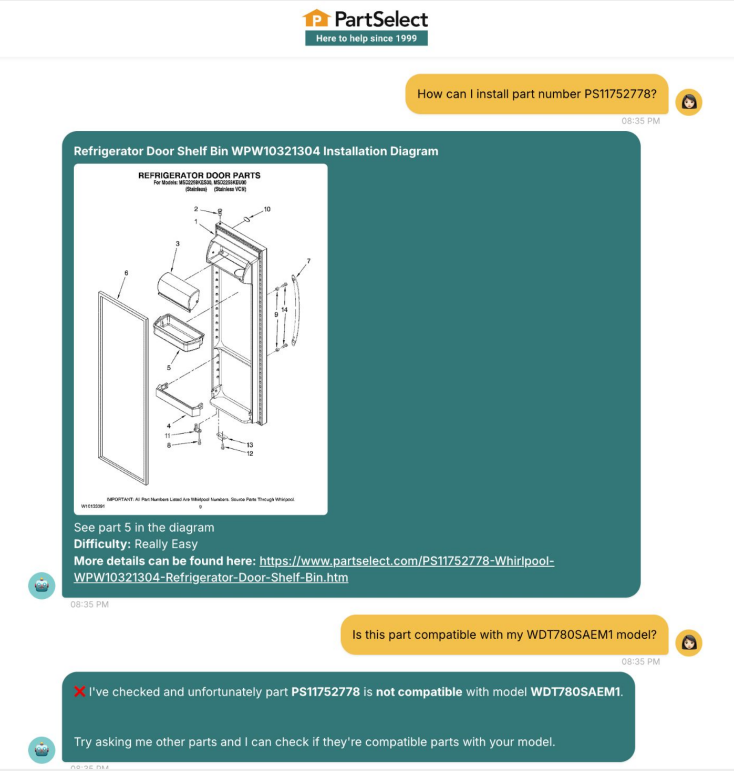
<diagnose>

What I Learned

- First time building an agentic system with LangGraph + RAG
- Combine vector search, scraping, and LLM reasoning
- Architectural thinking across backend/frontend/AI

Callout to ChatGPT, Stack Overflow, and lots of logger.info statements 😜

demo


PartSelect
Here to help since 1999
How can I install part number PS11752778?
08:35 PM
Refrigerator Door Shelf Bin WPW10321304 Installation Diagram
REFRIGERATOR DOOR PARTS
See part 5 in the diagram
Difficulty: Really Easy
More details can be found here: https://www.partselect.com/PS11752778-Whirlpool-WPW10321304-Refrigerator-Door-Shelf-Bin.htm
08:35 PM
Is this part compatible with my WDT780SAEM1 model?
08:35 PM
I've checked and unfortunately part PS11752778 is not compatible with model WDT780SAEM1.
Try asking me other parts and I can check if they're compatible parts with your model.

Future

- Optimize code for improved efficiency
- Create more helper functions and code files
- Configure formatting without reliance on LLM prompt engineering
- Expand database beyond refrigerator and dishwasher
- Enhanced UI/UX features!

thanks!