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ORBLOGIC NEXT-LEVEL CASE STUDY: MAJOR LEAGUE BASEBALL CHATBOT

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AI SOLUTIONS

AI Solutions use machine learning and smart algorithms to automate tasks, solve problems, and power intelligent chatbots for natural, efficient user interactions.

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1. EXECUTIVE SUMMARY

Orblogic has assessed the current MLB.com chatbot offering and identified critical shortcomings in data freshness, natural-language understanding, context-awareness, and content ingestion. This case study outlines a next-level solution leveraging OpenAI function-calling, headless browsing for live pricing, and PDF ingestion to transform the MLB chatbot into a fully contextual, real-time, multi-modal fan engagement agent.

BRINGING IDEAS AND INNOVATION TO LIFE THROUGH TECHNOLOGY

2. BACKGROUND: TODAY'S MLB CHATBOT

Scope & Limitations:

- MLB's existing Ballpark Digital Assistant is largely an FAQ engine for tickets, stadium logistics, and schedules. It relies on a static database updated every 5–15 minutes and fails on off-flow queries.

User Pain Points:

- Data staleness and opaque fee structures
- Lack of follow-up context (no conversation memory)
- Rigid, tree-based dialogue; no seamless human handoff
- Inability to ingest rich PDF guides (e.g. team media guides, promotional brochures)

3. KEY TECHNICAL CHALLENGES

No Vendor API for live ticket prices—requires scraping with Playwright or similar.

Limited Knowledge Base—chatbot cannot parse ad-hoc documents or promotional materials.

Static Polling Strategy—5–15-minute batch refresh leads to stale data in fast-moving ticket markets.

4. ORBLOGIC'S NEXT-LEVEL SOLUTION

4.1 REAL-TIME DATA VIA OPENAI FUNCTION-CALLING

Function Definition: Expose a **get_live_ticket_prices(event_id)** function schema to OpenAI.
On-Demand Scraper: Backend uses headless Playwright to scrape live vendor pages at query time. **Seamless Integration:** GPT-4o-mini auto-calls the function, returns structured JSON, then generates a fan-friendly natural-language summary.

4.2 CONTEXTUAL MEMORY & DIALOGUE MANAGEMENT

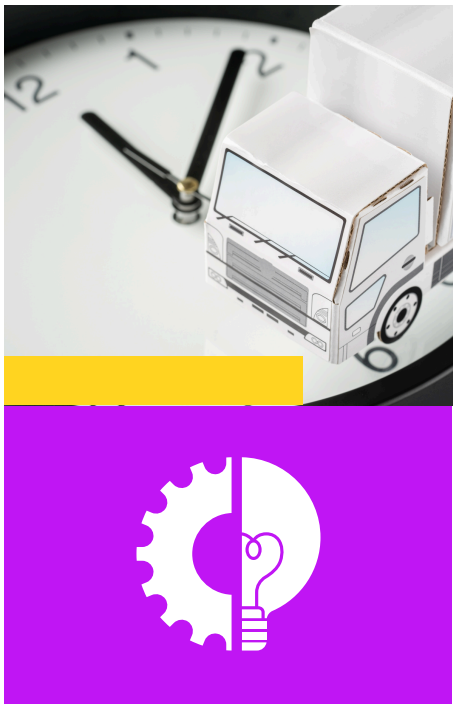
Session Tracking: Persist conversation history in a lightweight Redis store to enable follow-ups like "What about cheaper seats?" without re-prompting event details.
Threshold Alerts: Implement LLM logic to proactively suggest cheaper dates or compare different sections when prices exceed user's budget.

4.3 MULTI-MODAL KNOWLEDGE INGESTION (PDF FEEDS)

PDF Ingestion Pipeline: Allow clients to upload team media guides, promotional brochures, or stadium maps in PDF form.
Semantic Indexing: Use embeddings (e.g., OpenAI's text-embedding-ada-002) + a vector store to index PDF content.
Agent Tools: Define an **ingest_pdf(file_url)** function for GPT to call, enabling answers like "Who's the starting pitcher for tonight's game?" or "Where is the family suite located in Yankee Stadium?" by querying ingested PDFs.

4.4 REAL-TIME DELIVERY & CACHING

On-Demand HTTP Fetch: Front-end issues a standard HTTPS request to the chat endpoint for each live-price inquiry—no long-lived connections or WebSocket/SSE streams required.
Short-Term Cache: Identical scraper calls are cached for 20–30 seconds in Redis or in-memory, reducing load on the headless browser while preserving near real-time freshness.
Graceful Fallback: If the scraper fails (timeout, block, etc.), the system returns the last cached snapshot with a " Data may be delayed" flag, rather than opening additional streaming channels.



5. SOLUTION ARCHITECTURE DIAGRAM

```
flowchart LR
  subgraph User Web UI
    U[Fan Browser]
  end
  U -->|chat| OpenAI[OpenAI Chat API]
  OpenAI -->|function_call|getPrices[get_live_ticket_prices]
  getPrices -->|scrape| Scraper[Playwright Scraper]
  Scraper --> DB[Short-Term Cache/Redis]
  Scraper --> Vendor[Ticket Vendor Site]
  Vendor --> Scraper
  Scraper --> getPrices
  getPrices --> OpenAI
  OpenAI --> U
  note right of OpenAI: PDF ingestion via
  OpenAI -->|function_call| IngestPDF[ingest_pdf]
  IngestPDF --> PDFProcessor[Semantic Indexer]
  PDFProcessor --> VectorDB
  OpenAI --> VectorDB
  VectorDB --> OpenAI
```

6. BUSINESS BENEFITS

- **Increased Fan Engagement:** Real-time ticket insights and richer Q&A drive longer sessions and higher conversion rates.
- **Reduced Support Load:** Fewer escalations to live agents thanks to proactive budget alerts and dynamic fee transparency.
- **New Revenue Streams:** PDF-powered upsells (e.g. premium suite guides, VIP packages) and data-driven cross-sell opportunities.

7. ROADMAP & NEXT STEPS

Prototype & Validate: Develop and unit-test the **get_live_ticket_prices** and **ingest_pdf** functions.

Pilot Launch: Roll out to a select user group during a minor-league series for performance tuning.

Full Integration: Deploy on MLB.com's production environment with monitoring on latency, error rates, and user satisfaction.

Continuous Improvement: Incorporate feedback loops to retrain LLM prompts, refine scraper selectors, and expand PDF knowledge domains.