MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Labor and Delivery Assistant

The Capstone Experience

Team Stryker IST

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From Students…
…to Professionals

Project Sponsor Overview

- One of the world's largest medical technology corporations
- Stryker IST designs solutions that enhance patient safety, streamline clinical workflows and support healthcare professionals
- Key areas = Orthopedics, Neurotechnology, biologics

stryker

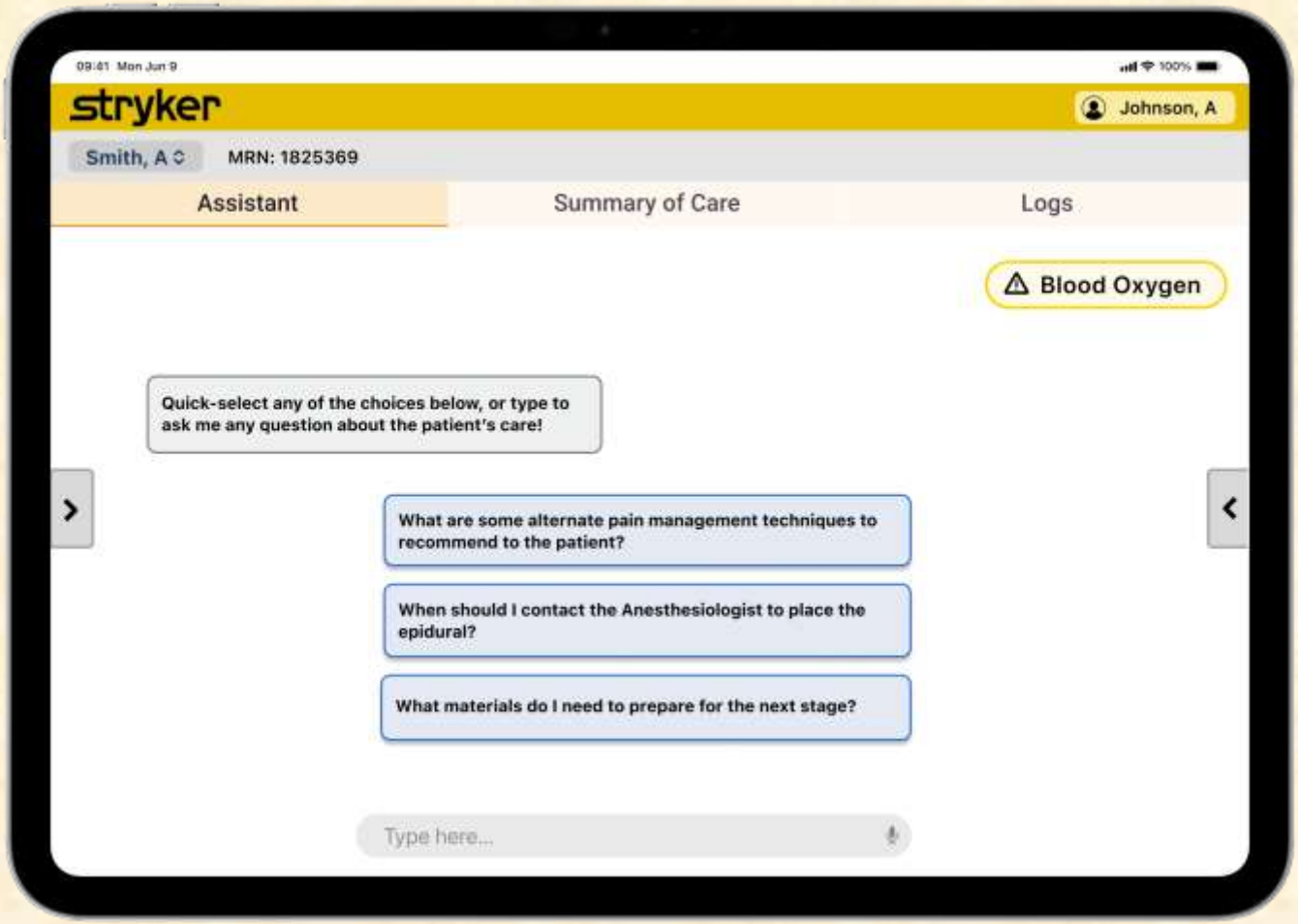
Project Functional Specifications

- Nurses operate in a high-stress environment. They constantly make decisions during shifts
  - Scattered resources and limited connectivity
- Workflow-Aware Labor & Delivery AI Assistant
  - Supports decision making, tracks patient conditions, and generates easy to read shift reports
- Safer, Faster, More Confident Clinical Decisions
  - Reduces missed steps, enhances patient safety

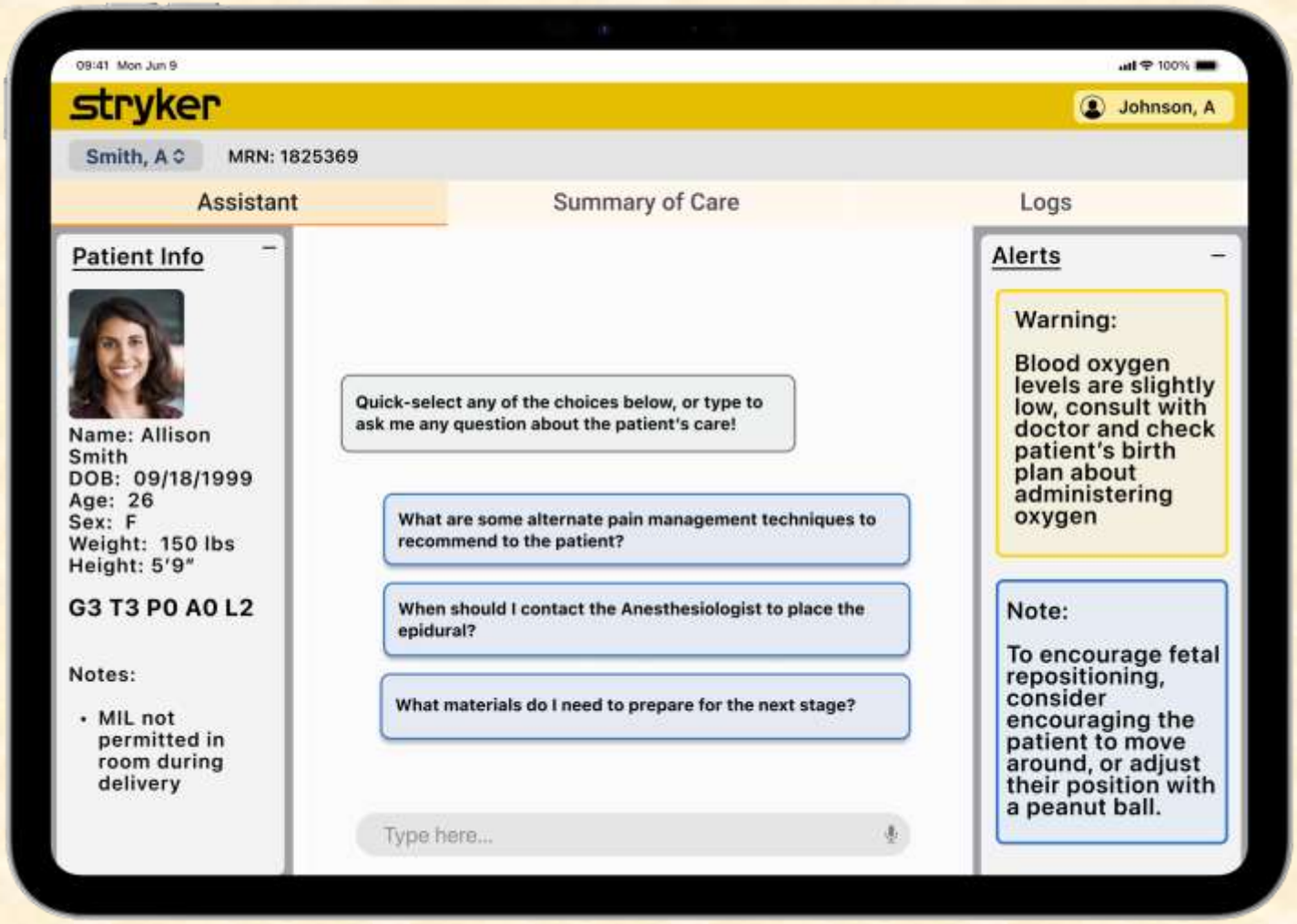
Project Design Specifications

- Least amount of input from user as possible
  - Reduce cognitive load, not add to it
- Focus on quick-taps and accessibility
- Easy integration into existing user workflows and routines
- Major features:
  - AI Chat Assistant
  - Summary of Care Shift Reports
  - Chat History Logs

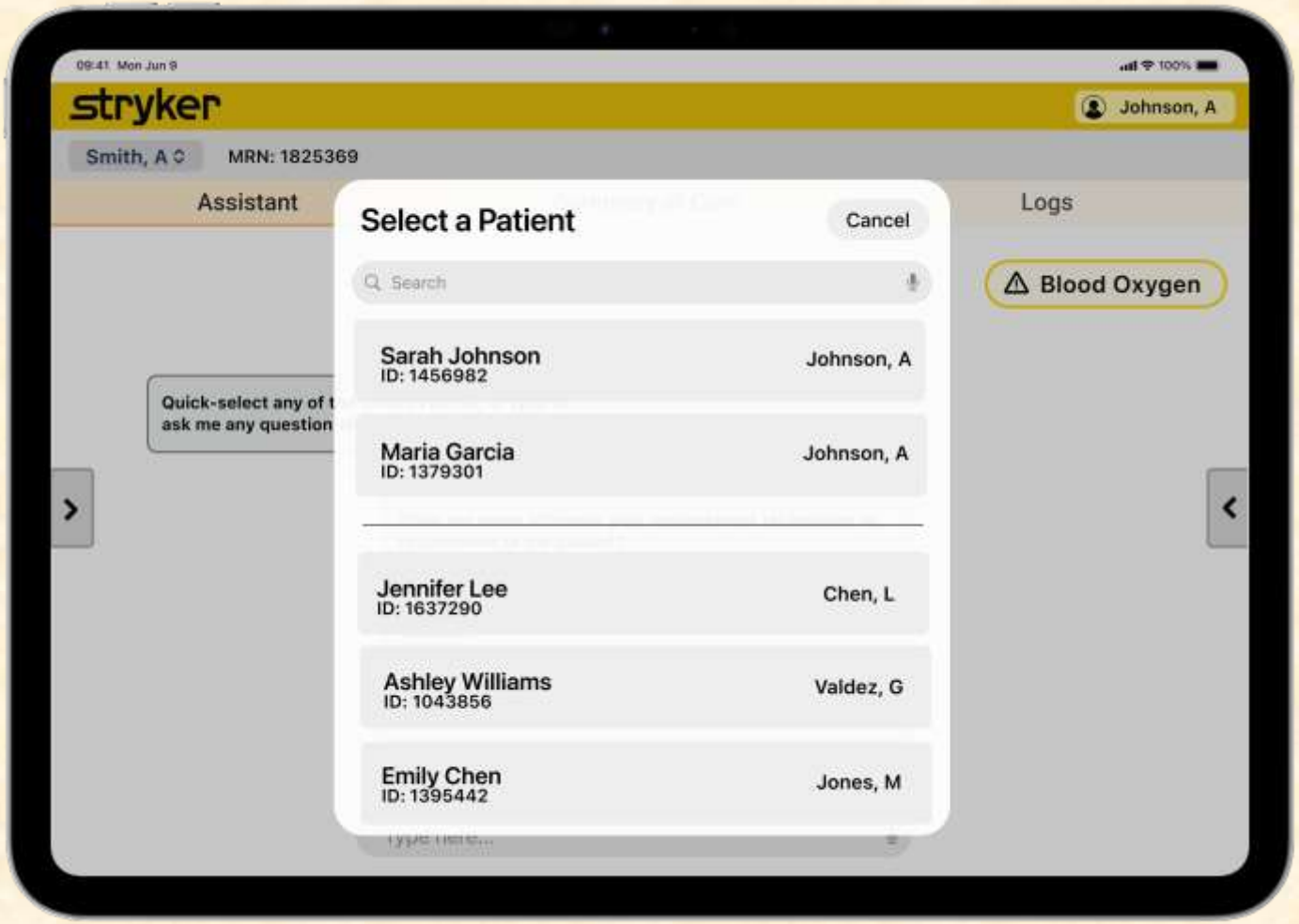
Screen Mockup: Assistant Page



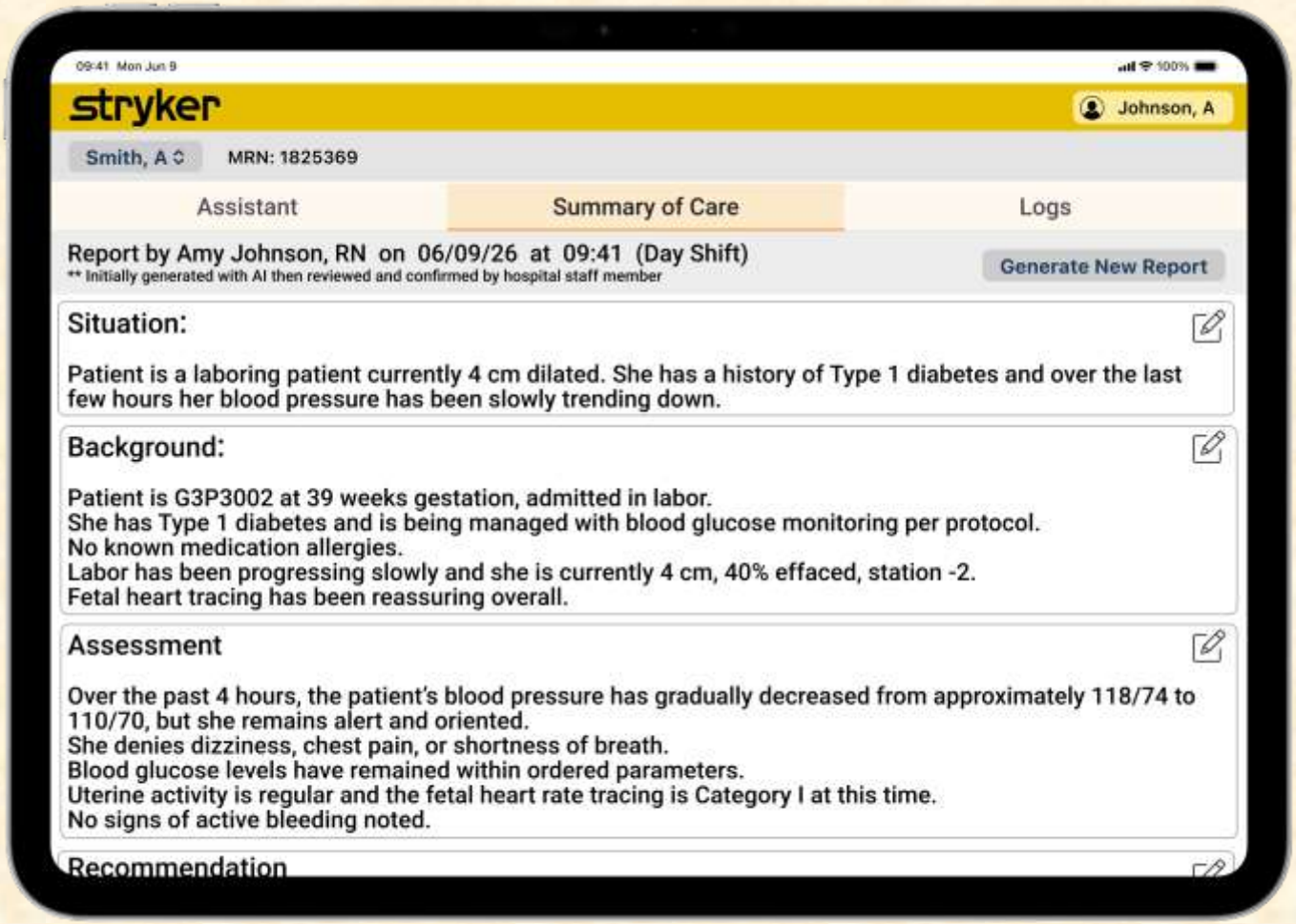
Screen Mockup: Patient Info and Alerts



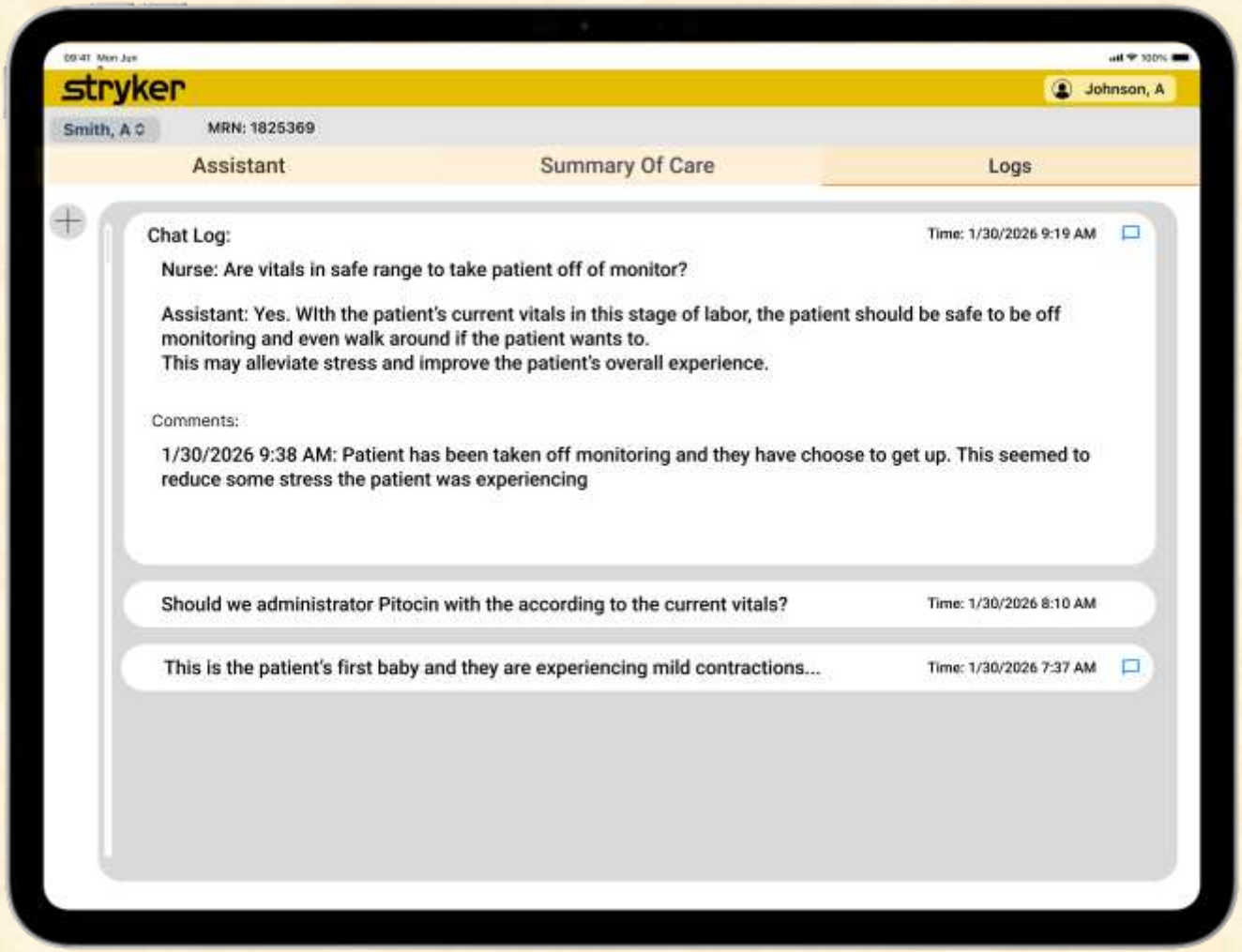
Screen Mockup: Patient Look-up



Screen Mockup: Summary of Care Page



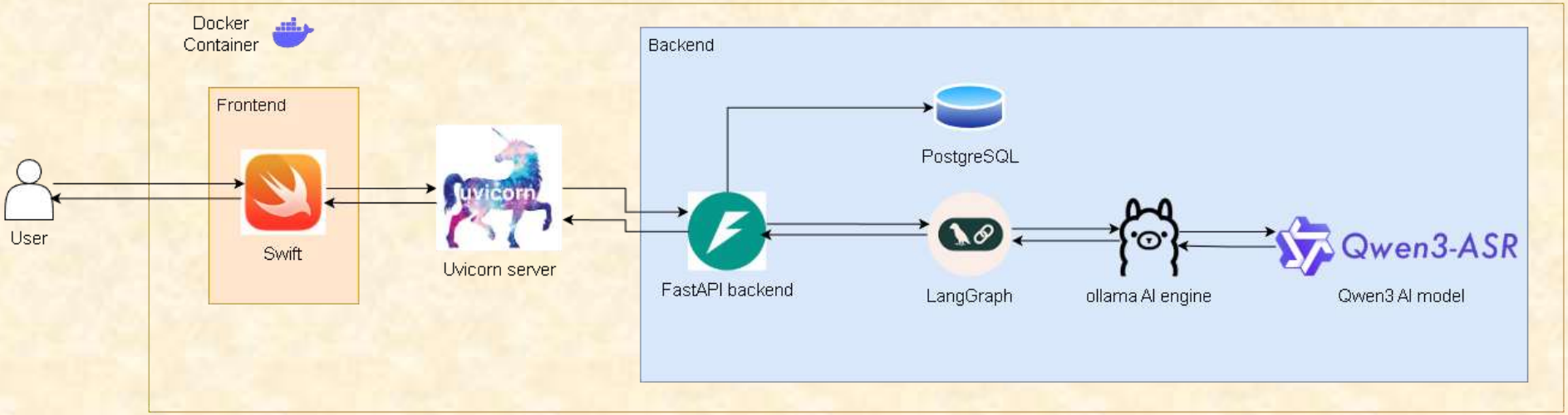
Screen Mockup: Logs Page



Project Technical Specifications

- Continuous AI Assistant – Chat
  - Powered by LangGraph, Ollama
- Generate a summary by voice recognition
  - Powered speech recognition AI models (qwen3-asr)
- Optimized for quick touches and responsive UI
  - Powered by Swift, Uvicorn, FastAPI
- Maintaining medical records consistency
  - Powered by PostgreSQL database

Project System Architecture



Project System Components

- Hardware Platforms
  - IOS devices (iPad)
  - EHR (Electronic Health Records)
- Software Platforms / Technologies
  - Frontend: Swift, Developing on Xcode
  - Backend: FastAPI application using Python and PostgreSQL database
  - Ollama engine and LangGraph library for AI deployment
  - Application is Containerized by Docker and hosted on Uvicorn server

Project Risks

- Risk 1: Patient Security
  - Preserving patient data security
  - Deploy a containerized local server to reinforce cybersecurity and keep sensitive patient information
- Risk 2: LLM Accuracy
  - LLM hallucination in clinical settings
  - To fix, use an agentic search that actively retrieves verified clinical knowledge rather than relying solely on pretrained reasoning
- Risk 3: Network Connectivity
  - Unreliable hospital network connectivity
  - To fix, build local data persistence so core features work offline without cloud dependency
- Risk 4: Accessibility
  - Usability under delivery room stress
  - To fix, design for quick-tap interactions and implement voice commands for hands-free access

Questions?

