AIE3 Demo Day Project

HTM-LLM (Healthcare Technology Management - Large Language Model)

**Problem:**

Biomedical technicians spend significant time searching through extensive technical service manuals to find information needed for equipment maintenance and troubleshooting.

**Why**

This is a problem worth solving because the inefficiencies and delays caused by manually searching for information can lead to increased downtime for critical medical equipment, which can impact patient care and hospital operations. Reducing the time technicians spend on this task can improve equipment availability, enhance productivity, and ultimately support better healthcare outcomes.

**Success**

Success for the demo day project is an LLM chatbot which uses RAG on a set of publicly available medical device service manuals and can answer technical questions. In production, success looks like a reduction in the average time spent by technicians searching for information and an increase in the uptime of medical equipment. Key Performance Indicators (KPIs) include user satisfaction, adoption rates among biomedical technicians, and measurable improvements in maintenance efficiency.

**Audience**

The primary users of this product are biomedical technicians and engineers who face the pain point of needing quick and easy access to detailed, specific information from technical service manuals. Hospital maintenance and operations staff, as well as healthcare facility managers, also benefit from the increased efficiency and equipment uptime.

**Potential Solution**

The solution involves developing an LLM-powered assistant using RAG to quickly search through technical service manuals, providing concise, relevant answers to technicians’ queries. Data sourcing will start with publicly available technical service manuals from various medical equipment manufacturers, and may later be extended to historical maintenance logs, proprietary technical service manuals, technician queries, and user feedback. The model will leverage fine-tuning of embeddings and an LLM chat model to enhance accuracy and relevance.

**Share**

The project will be shared within the Dayton VA Medical Center and in the AIE3 Discord.