

**PROBLEM**

Traditional service discovery tools rely on basic keyword matching, lacking the contextual understanding to provide relevant results. This forces developers to waste an estimated 50% of their time manually searching for services, causing significant project delays and productivity losses.

**GOAL**

To revolutionize the service discovery process by developing SERVIO, an intelligent platform that uses AI to provide fast, accurate, and context-aware service recommendations. Our goal is to cut developer search time in half and dramatically improve result accuracy.

**APPROACH**

Our system uses a dual-module architecture to accommodate different user needs:

- **Direct Discovery:** A high-precision search using a combination of syntactic and semantic matching. Users can provide detailed aspects via XML to get highly specific, ranked results refined by an LLM.
- **Guided Discovery:** A conversational AI chatbot powered by Retrieval-Augmented Generation (RAG). It understands natural language queries, asks clarifying questions, and processes uploaded documents (JSON, XML, UML) to provide the most contextually relevant services.

**TECHNOLOGIES**

- **AI/ML:** RAG (Retrieval-Augmented Generation), LLMs (Groq, LLaMA 3), NLP Embeddings
- **Vector Database:** FAISS (Facebook AI Similarity Search)
- **Web Stack:** React (Frontend), FastAPI (Backend)
- **Semantic Logic:** WordNet, Cosine Similarity

**RESULTS AND CONCLUSION**

Our approach yielded significant improvements over traditional methods.

- **87% Final Accuracy:** The Guided Discovery (RAG) module achieved the highest accuracy, demonstrating the power of conversational context.
- **+220% Accuracy Improvement:** SERVIO's AI-driven semantic search dramatically outperformed the 27% accuracy of baseline syntactic methods.
- **Proven Efficiency:** By providing relevant results instantly, SERVIO validates its potential to drastically reduce manual search effort for developers.

**Conclusion:** AI-powered, context-aware RAG systems are demonstrably superior to traditional keyword-based methods for complex service discovery tasks.

