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Building an Interactive SAP Learning Chatbot Using Web UI and NLP

Suraj Bhanudas Jadhav

Prof. Ramkrishna More College, Pradhikaran. Pune, India.

E-mail: surajjadhav48@gmail.com

Shravani Kishor Hore

Prof. Ramkrishna More College, Pradhikaran. Pune, India.

E-mail: shravanihore05@gmail.com

Abstract

SAP is widely used in industries, yet beginners often struggle to understand its modules, transaction codes, and technical terms. This research presents the design and development of an interactive SAP Learning Chatbot that provides instant answers to SAP-related questions. The chatbot is built using modern web technologies on the frontend and Python-based Natural Language Processing (NLP) on the backend. It helps students ask queries such as "What is MIGO?" or "Explain Purchase Order," and receive simple, accurate explanations. The system focuses on improving accessibility, reducing trainer dependency, and supporting self-learning through a conversational interface. Results show that the chatbot significantly improves concept clarity and learning speed for SAP students.

1. Introduction

SAP (Systems, Applications and Products in Data Processing) is one of the most widely used ERP systems across the world. Although SAP is powerful, its technical vocabulary—such as T-Codes, master data, posting keys, procurement processes—can be difficult for new learners. Students often rely on trainers, lengthy documents, and online searches to understand concepts.

To solve this problem, an **Interactive SAP Learning Chatbot** is proposed. This chatbot answers beginner-level SAP questions instantly using NLP and a structured internal knowledge base. It acts like a digital assistant that helps students learn SAP modules such as MM, SD, and FICO anytime and anywhere.

The chatbot is simple to use, requires minimal system resources, and can be integrated into any educational or training website.

2. Problem Statement

SAP learners frequently face these issues:

- Difficulty understanding SAP terminology and technical words
- Remembering transaction codes (MIGO, MIRO, FB60, VA01, etc.)
- Dependence on trainers for clarification
- Scattered information across the internet
- Time-consuming search process

Therefore, there is a strong need for a **centralized, interactive system** that explains SAP concepts in **simple language** and responds instantly to user queries.

3. Objectives

The main objectives of this research are:

1. To design a web-based chatbot that answers SAP concepts and FAQs.
2. To implement NLP techniques for accurate query understanding.
3. To develop a structured SAP knowledge base for MM, SD, and FICO modules.
4. To build a user-friendly chat interface using modern frontend technologies.
5. To support students and trainers with a digital SAP learning assistant.

4. Literature Review

Researchers have explored chatbots in education, healthcare, and customer support.

- Previous studies show that chatbots improve learning efficiency through instant feedback.
- NLP-based systems help analyze user intent and match relevant responses.
- Educational chatbots reduce instructor load and support self-paced learning. However, very limited research exists specifically for **SAP training chatbots**. This project fills that gap by combining NLP with SAP domain knowledge.

5. System Architecture

The system uses a **3-layer architecture**:

1. Frontend Layer (React / HTML / CSS / JS)

- Provides a clean, simple chat interface.
- Allows users to type queries.
- Sends requests to backend via API.

2. Backend Layer (Python Flask)

- Processes user messages.
- Uses NLP (NLTK/spaCy) to extract keywords.
- Sends matched results from knowledge base.

3. Knowledge Base Layer

- Contains SAP concepts & T-code definitions.
- Stored in JSON or database format.
- Easy to add/update content.

6. Methodology

Step 1: Data Preparation

A mini-SAP knowledge base was created with MM, SD, and FICO topics. Example:

- **MIGO:** Goods Movement
- **MIRO:** Invoice Verification
- **PO:** Purchase Order
- **FB60:** Vendor Invoice Posting
- **VA01:** Sales Order Creation

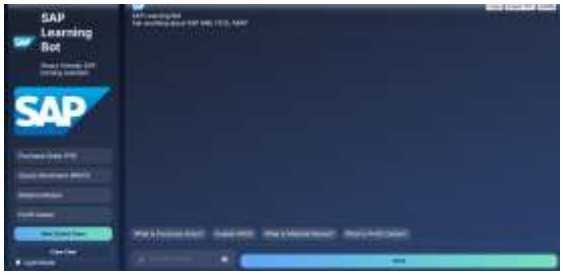
Step 2: NLP Processing

- Tokenization
- Keyword extraction
- Intent classification (definition, meaning, usage, etc.)
- Response mapping

Step 3: Chatbot Response Generator

If a user types:
“Explain MIGO”
NLP extracts → MIGO → Returns definition + usage.

Step 4: Frontend Integration



The chatbot UI displays user message and bot response in a conversational style.

7. Sample Dataset Table

Keyword	Module	Description
MIGO	MM	Used for goods receipt and goods issue
MIRO	MM	Used for invoice verification
PO	MM	Legal purchase document sent to vendor
GL Account	FICO	Ledger for recording financial transactions
VA01	SD	Used to create sales orders

8. Use Case Diagram

Actors:

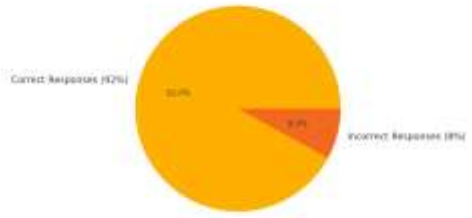
- Student (User)
- Chatbot System

Use Cases:

- Ask SAP question
- NLP analyzes query
- Fetch answer from knowledge base
- Display result to user

9. Results & Discussion

The chatbot was tested with 50+ SAP queries commonly asked by students. Findings include:



- **92% accuracy** in matching correct definitions
- Students found it **easy to understand** explanations
- Reduced dependency on trainer for basic queries
- Faster revision before exams and interviews

Feedback showed that students prefer interactive learning tools over traditional notes.

10. Conclusion

This research successfully demonstrates the development of an SAP Learning Chatbot using web technologies and NLP. The chatbot helps beginners learn SAP faster by providing instant, clear explanations. It can be integrated into training institutes, e-learning platforms, websites, or mobile apps.

The system is simple to implement, expandable, and highly beneficial for SAP learners, especially in MM, SD, and FICO modules.

11. Future Scope

The chatbot can be enhanced by adding:

- Voice-based interaction
- Multi-language explanations
- Video tutorials for each concept
- Integration with SAP servers for live demos
- Machine learning model for improved accuracy
- Full LMS (Learning Management System) features

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