**Build Agentic RAG System to Answer User Queries**

1. **Problem Statement**

The goal is to develop an Agentic Retrieval-Augmented Generation (RAG) system that can effectively respond to user queries based on the contents of a dataset that consists of PDF files. These PDFs contain a mixture of text, images, and tables. This RAG system should retrieve relevant information from these different formats and generate coherent and contextually accurate answers to the user’s question.

1. **Dataset Details**

Use the shared PDF files containing three main components: text, images, and tables. Each file represents a document or report that may vary in complexity, structure, and layout (Single column / Mulit-Column).

**Text:**

* Contains paragraphs, bullet points, numbered lists, and multi-column layouts.
* Different sections within the document, such as Introduction, Methods, Results, and Conclusions.

**Images:**

* charts, graphs, diagrams, and infographics

**Tables:**

* Tabular data with rows and columns that represent structured information.
* Tables contain numerical data, textual information, and mixed data types.

1. **Challenges to Address:**

* Chunking Strategy: Document Layout Variations, Image, and Table interpretations.
* Contextual Understanding: The system must have the capability to understand the context in which the user query is asked, especially when combining multiple sources of information.
* RAG Mechanism: The retrieval-based approach should effectively filter out irrelevant sections of the document and focus only on the parts of the text, tables, or images that are pertinent to the query.

1. **Deliverables:**

* A functional Agentic RAG system capable of answering user queries from the provided PDF dataset.
* A comprehensive evaluation report with metrics to assess the accuracy, relevance, and fluency of the system.
* Documentation detailing the architecture and approach of the system.