### 1. The Goal: Measuring Accuracy

The primary objective of this workflow is to determine how accurately an automated process can analyze a document. Specifically, we want to measure its ability to perform two tasks:

1. Correctly identify the key topics discussed in the document.
2. Pinpoint the exact starting location (page and line number) of each topic.

This is a common task in Natural Language Processing (NLP) and is fundamental to building reliable AI systems that can understand and segment text.

### 2. The Files: Our Cast of Characters

This process relies on three key files, each with a distinct role:

- **DepostionForPersisYu_LinkPDF.pdf (The Source Document):** This is the original, unstructured document that we want to analyze. It contains all the raw information.
- **topics.json (The Automated Output):** This file is the output from your automated process or AI model. It represents the model's "best guess" at identifying the topics and their locations. **This is the file we are testing.**
- **ground_truth.json (The Verified Benchmark):** This file is our "answer key." It has been manually created and verified by a human to ensure that its summaries accurately reflect the content at specific locations in the PDF. **We assume this file is 100% correct.**

### 3. The Core Assumption: The Source of Truth

The entire accuracy check hinges on one critical assumption: **the ground_truth.json file is the definitive source of truth.** We trust its content completely because it was manually created or validated. Any comparison we make is to see how well the automated output (topics.json) measures up against this trusted benchmark.

### 4. The Verification Steps: A Hybrid Approach

The process uses a combination of automated checks and manual validation to produce a reliable accuracy score.

Step 1: Automated Consistency Check
The first step is a quick, automated sanity check. You can compare the list of topic names from topics.json with the list from ground_truth.json. This ensures that the automated process didn't miss any topics or invent extra ones. The check should only proceed if the lists match perfectly.
Step 2: Manual Location Verification (Human-in-the-Loop)

This is the core of the accuracy test. It's a guided verification process for each topic:

1. **Present a Case:** For a single topic, you look at the location (page and line) found in topics.json.
2. **Provide Context:** You also reference the human-verified summary for that same topic from ground_truth.json.
3. **Be the Judge:** You then open the PDF, go to the specified page and line, and use the summary as context to decide if the location is correct.

Step 3: Calculating the Final Accuracy Score

After you have judged every topic, you can calculate the final score. It's a simple percentage:

Accuracy = (Number of Correct Locations / Total Number of Topics) * 100