Module 4:
Debugging & AI Error Correction

Turning Runtime Failures into Learning Opportunities

01. Decoding Python Errors

Recognizing patterns in the chaos of a traceback.

Common Beginner Mistakes

SyntaxError

Occurs when Python doesn't understand your "grammar"—missing colons, mismatched parentheses, or typoed keywords.

ModuleNotFoundError

The "Library Slip." You're trying to use a tool (like pandas) before telling Python to import it.

IndentationError

Specific to Python: your code blocks (loops, functions) aren't aligned correctly. AI is an expert at fixing these.

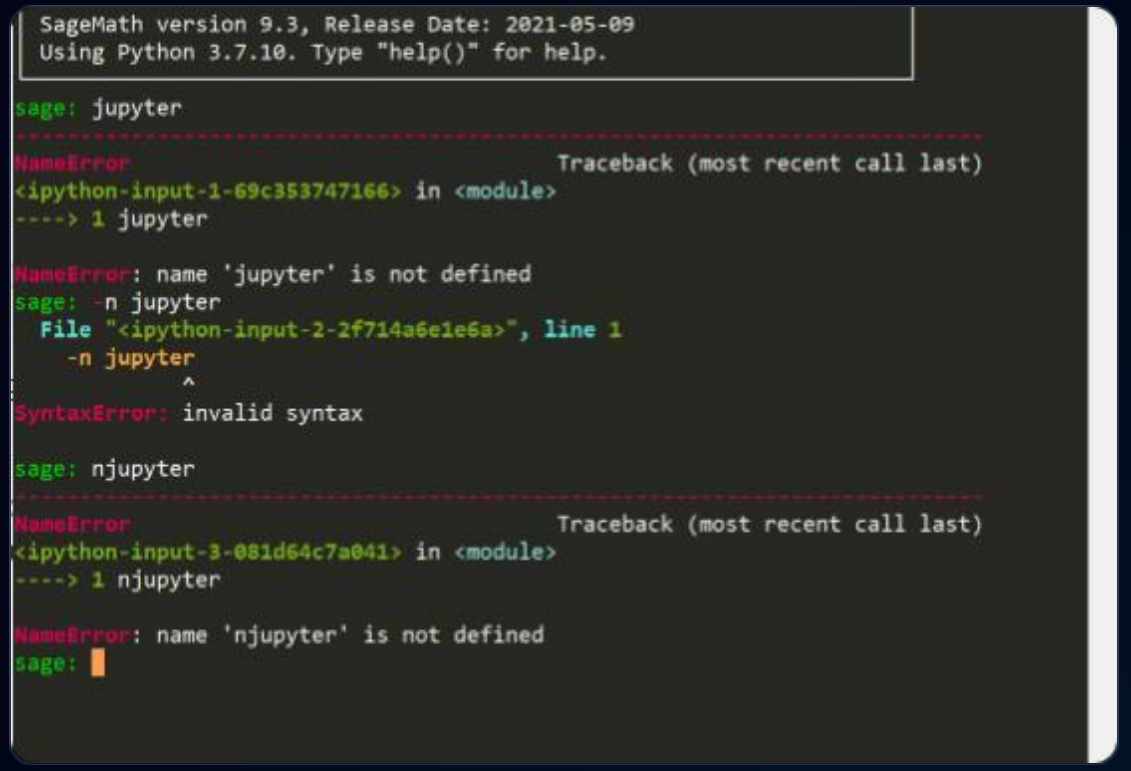
Anatomy of a Traceback

Reading the Red Text

Tracebacks provide the roadmap to the problem. To an AI, this wall of text is a set of precise instructions for a fix.

- **Line Number:** Exactly where it broke.
- **Error Type:** The technical category.
- **Error Message:** The specific reason.

Don't be intimidated by the length; the most important info is usually at the **very bottom**.



02. The Copy-Paste Fix Method

Your fastest route from failure to functionality.

AI Debugging Workflow

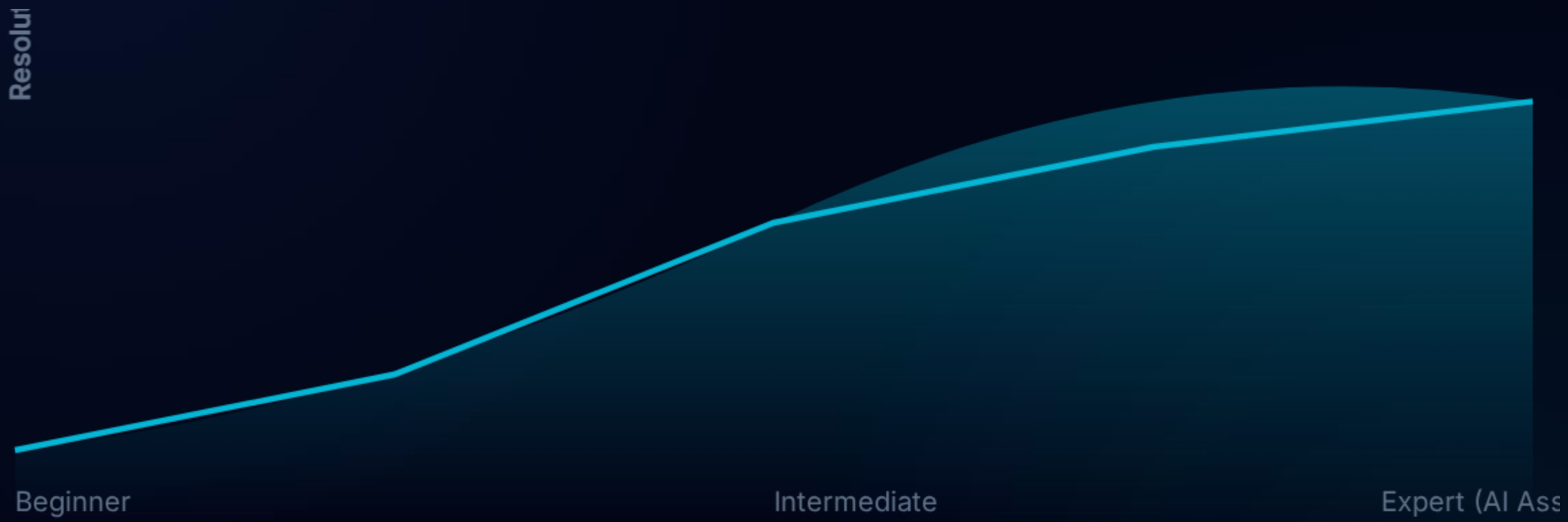
Step 1: Capture

Copy the **entire** error message from Jupyter, from the top of the traceback to the final error description.

Step 2: Command

Prompt the AI: "I am getting this error in my Jupyter cell. Here is my current code [paste code] and the error [paste error]. Please fix it."

Debugging Speed: AI vs. Manual



AI-assisted debugging allows beginners to bypass the "frustration plateau" of syntax troubleshooting.

03. Code Interrogation

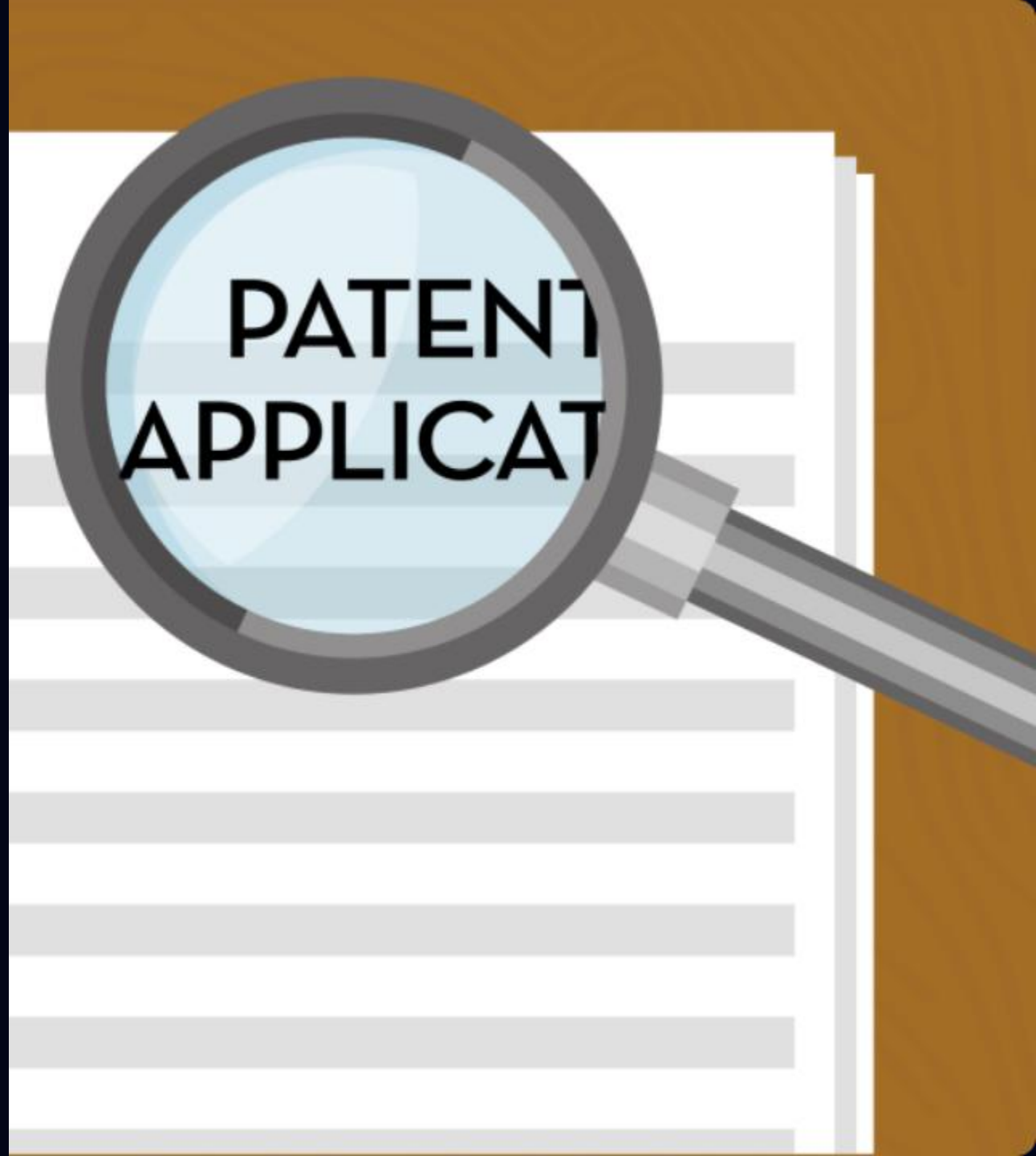
Don't just fix it—understand why it works.

The Line-by-Line Dive

Decoding Generated Logic

When the AI provides a fix, don't just blind-paste. Ask: "Can you explain this fix line-by-line?"

This "interrogation" turns the AI into a private tutor, revealing the underlying Python logic that you can apply next time without assistance.



Learning from the Fix

- **"Why did this break?"** Ask for the root cause to prevent repeating the same mistake.
- **"Is there a simpler way?"** AI often writes complex code; ask for the "beginner-friendly" version.
- **"Comment this code."** Request the AI to add internal notes to each line so your future self understands the logic.

Hands-On Exercise

Objective: Break, Feed, and Fix.

1. Intentionally remove a colon from a code cell.
2. Copy the resulting error message.
3. Prompt the AI to fix it and **explain** the error type.

Questions?

Next Module: Advanced Visual Formatting

ai.training.hub | support@datacorp.com

Image Sources

https://i.sstatic.net/83jVp.png

Source: stackoverflow.com

https://actonline.org/wp-content/uploads/2014/07/patent-03-e1405577385139.png

Source: actonline.org