

Agentic Engineering

When AI Stops Suggesting and Starts Doing

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Exploring Agentic AI in Model-Based Design with MATLAB and Simulink – Lucid Motors

MathWorks **AUTOMOTIVE CONFERENCE**

As an Engineer, I want to ..



Be efficient with my time on the project



Feel accomplished while working on the project



Write good documentation (But I don't want to write it myself 😊)

LUCID

[MathWorks Automotive Conference North America 2026](#)

Lucid put an agent inside virtual vehicle development

Lucid's engineers build virtual vehicle models. In practice that meant constant switching between specs, scripts, models, and test results.

**Navigates the
Simulink model**

**Runs model-in-the-
loop tests**

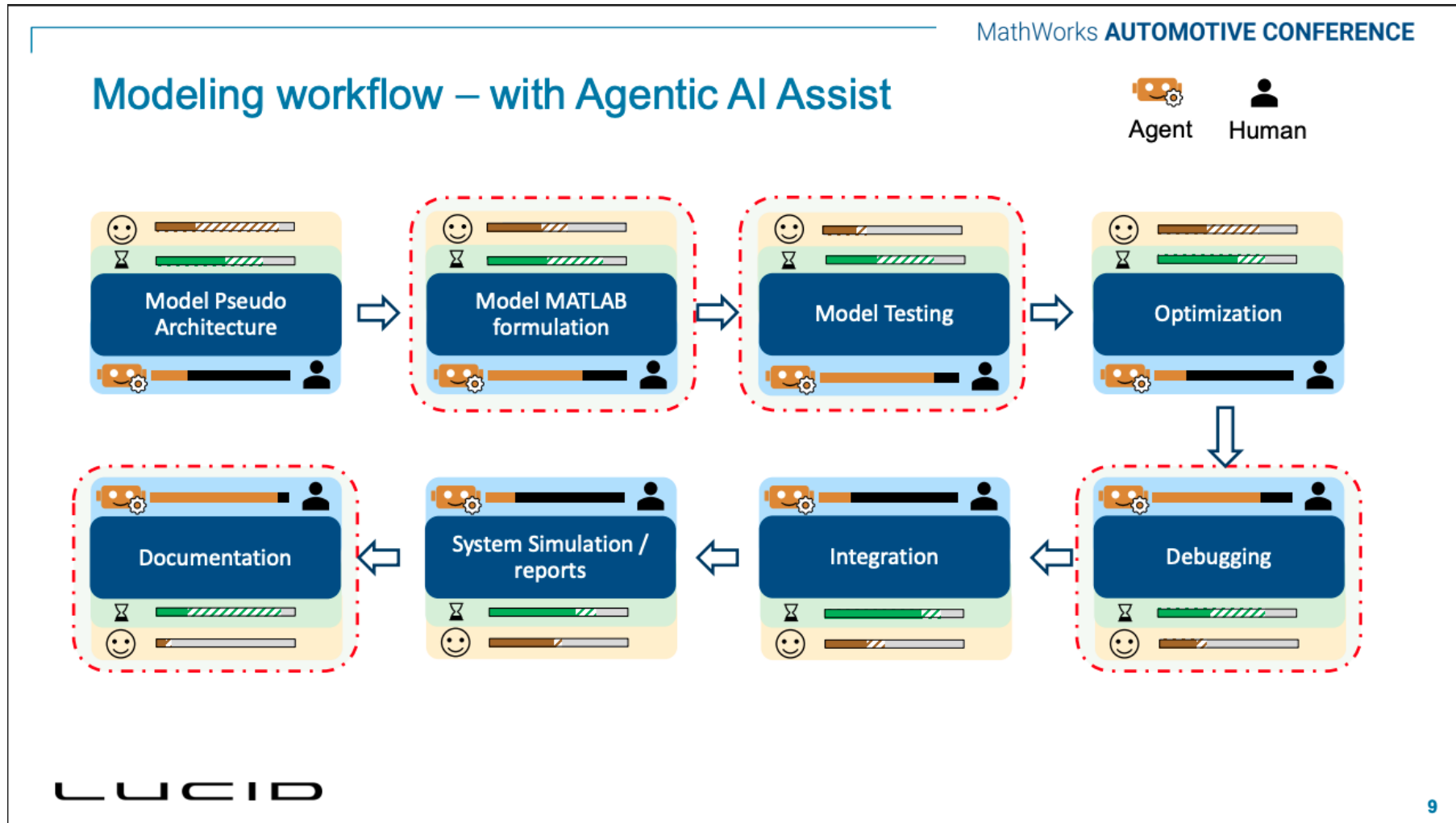
**Diagnoses errors,
reports back**

**Engineers hold the
decisions**

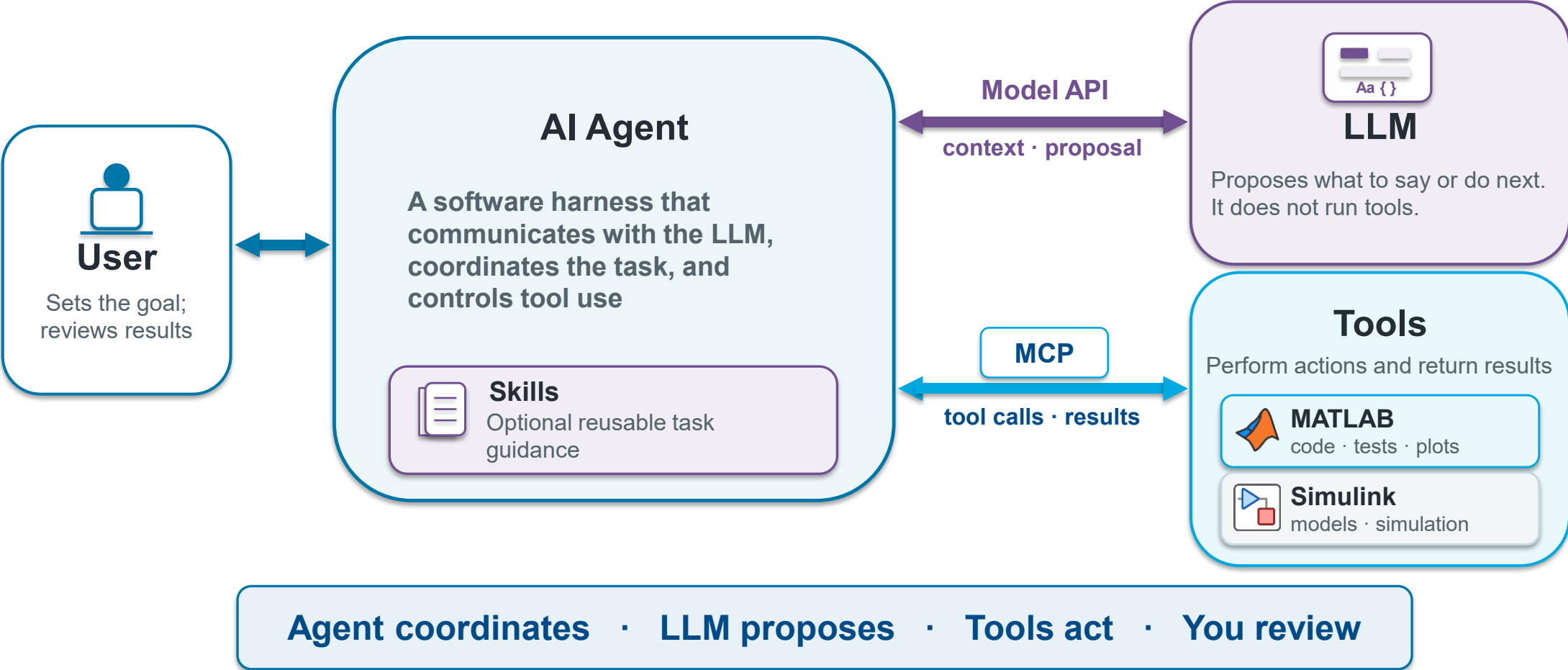
“Reduced integration time and rework, while maintaining traceability”

[Fauzan Dhongre, Lucid. MathWorks Automotive Conference 2026.](#)

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Agentic AI: the mental model



Concerns around Agentic AI



Educators: agents bypass the productive struggle necessary for true learning



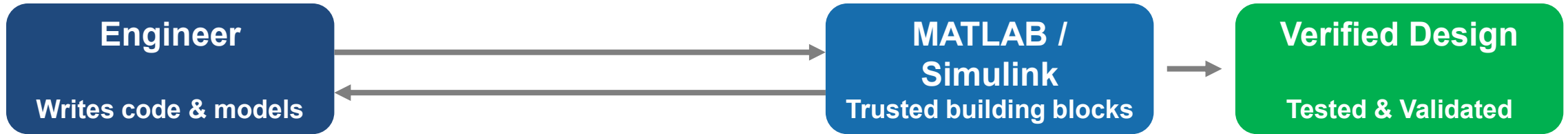
Researchers: agents will compromise experimental reproducibility and introduce execution risks



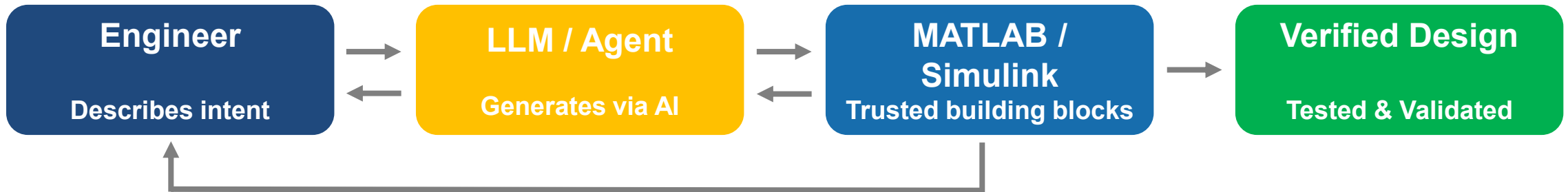
Students: losing their fundamental technical skills by over relying on agents

AI changes creation speed, not engineering accountability

Traditionally



With AI



What doesn't change when you add AI

The engineer owns the design. The same engineering evidence verifies it.

AI is everywhere in the lab. Then comes deployment

46%

of AI proofs-of-concept never reach production

42% of companies abandon most AI initiatives, up from 17% a year earlier

Developers' top issue with AI in 2025: output that is almost right, but not quite

S&P Global Market Intelligence 2025 (n = 1,006). Stack Overflow Developer Survey 2025

Speed comes from the agent
Trust comes from the workflow

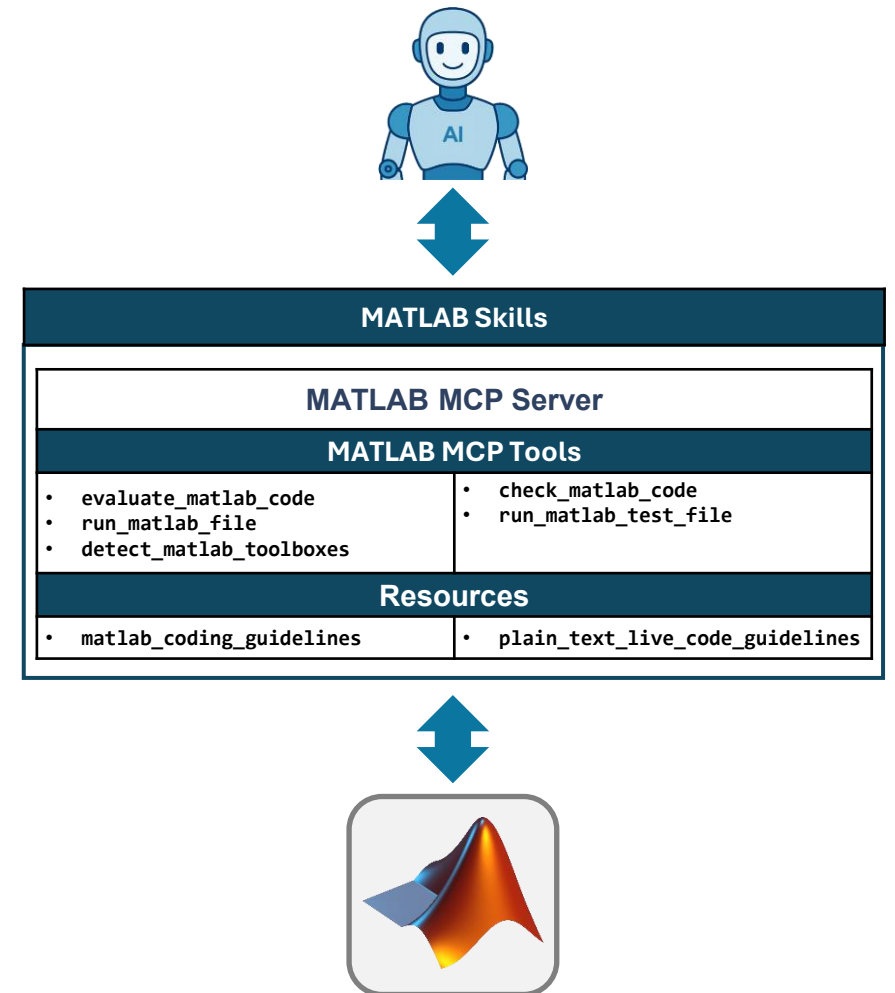
Components to start using MATLAB with AI Coding Agents

1. An LLM that supports tool calling – **GPT 5.6**
2. AI Agent that supports MCP – **Codex CLI**
3. **Connection between MATLAB & AI Coding Agents via MCP – ??**

MATLAB Agentic Toolkit

Connect trusted MATLAB capabilities to AI agents to make engineering and scientific workflows agent-ready

- A **free, open-source** local MCP server that connects GenAI assistants to a **locally licensed** MATLAB, enabling intelligent automation and code execution
- Expert Skills Catalog encode MATLAB best practices, guiding AI in testing, debugging, and code modernization.

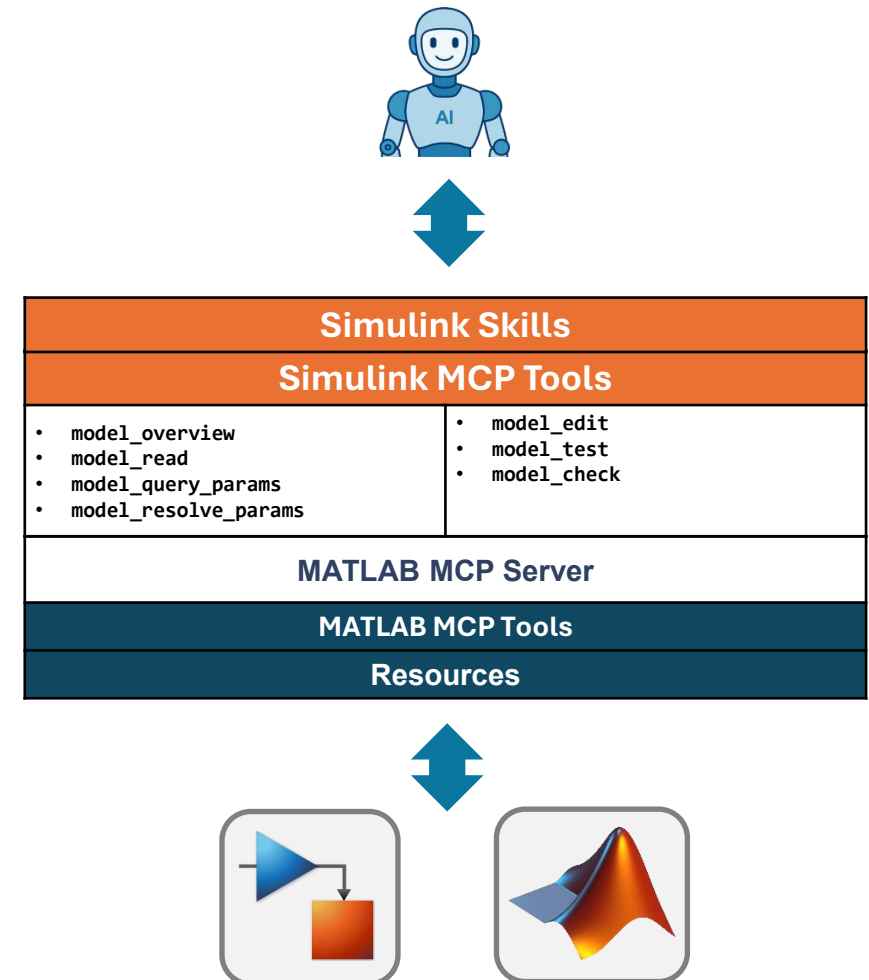


<https://github.com/matlab/matlab-agentic-toolkit>

Simulink Agentic Toolkit

Connect agents to Simulink giving them the ability and the knowledge to work with Simulink models effectively.

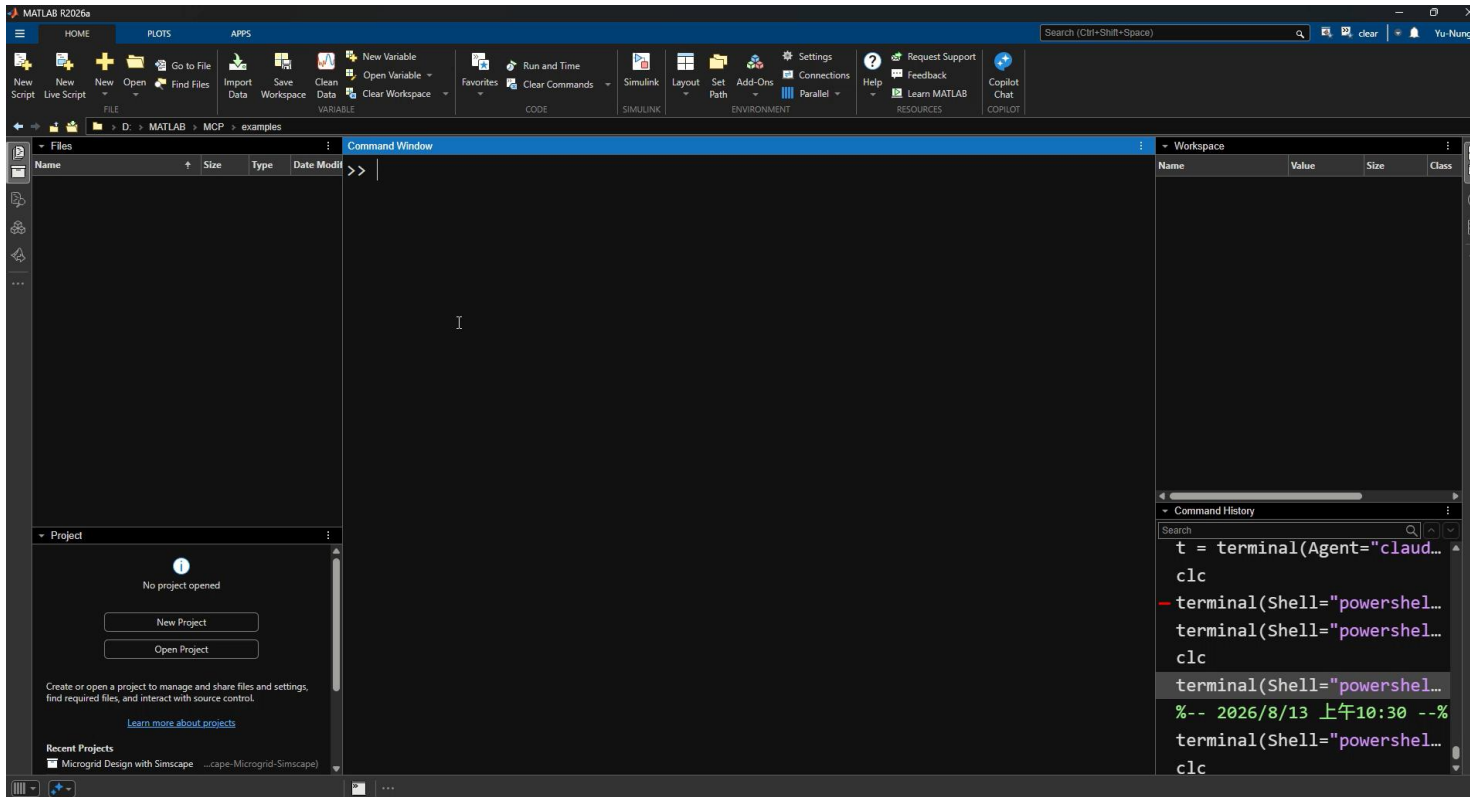
- Builds on top of the MATLAB MCP Server
- MCP tools for reading, editing, querying, testing, and checking Simulink models
- Agent skills encoding Model Based Design best practices for model building, plant specification, testing, requirements, and tool initialization



<https://github.com/matlab/simulink-agentic-toolkit>

Agentic AI in action –

Create live script to animate a fractal tree branching out 10 times in MATLAB



Setup I used

1. Agent: Codex
2. LLM: GPT 5.6
3. MATLAB R2026a
4. MATLAB Agentic Toolkit & Simulink Agentic Toolkit



terminal-in-matlab

Embedded system terminal for MATLAB

<https://github.com/matlab/terminal-in-matlab>

 Prabhakar Staff Version 0.3.2 (9.59 MB) 770 Downloads 4.70/5 (3)

31 Jul 2026

[Download](#)
[Open in MATLAB Online](#)
[Share](#) [Follow](#)

<https://www.mathworks.com/matlabcentral/fileexchange/184013-terminal-in-matlab>

Skills:

Sharable packages of instructions, scripts, and resources to give agents specialized capabilities and domain expertise

The screenshot shows a GitHub repository for 'matlab-agentic-toolkit'. The 'Skills' catalog is visible, listing various skills. The 'matlab-create-live-script' skill is highlighted, showing its metadata and description.

name	matlab-create-live-script				
description	Create, edit, and run plain-text MATLAB live scripts (.m files) with rich text formatting, LaTeX equations, section breaks, and inline figures. Use when generating tutorials, analysis notebooks, reports, documentation, or educational content, when modifying existing live scripts, or when converting existing binary .mlx files to .m for version control. Requires R2025a+.				
license	MathWorks BSD-3-Clause				
metadata	<table border="1"><thead><tr><th>author</th><th>version</th></tr></thead><tbody><tr><td>MathWorks</td><td>2.2</td></tr></tbody></table>	author	version	MathWorks	2.2
author	version				
MathWorks	2.2				

Live Scripts

Plain-text .m files that render as rich documents in the MATLAB Live Editor. Version-control friendly — never use binary .mlx .

When to Use

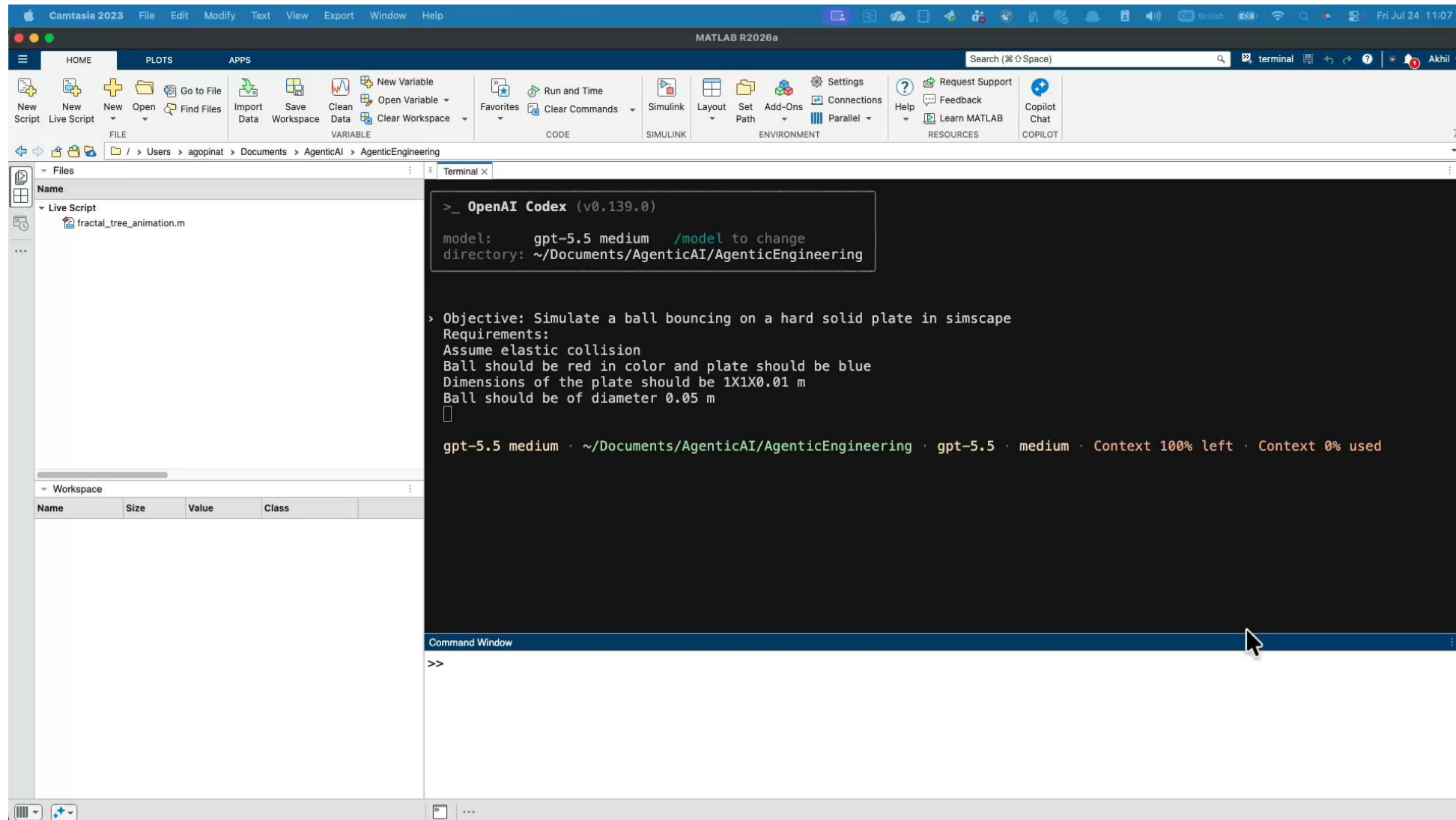
- Tutorials, reports, analysis notebooks, or documentation
- Interactive exploration with inline figures and equations
- Version-controlled content (plain-text .m , not binary .mlx)

A different problem – Bouncing Ball

Engineering problem solving start from defined objectives & requirements

- **Objective:** Simulate a ball bouncing on a hard solid plate in Simscape
- **Requirements:**
 - Assume elastic collision
 - Ball should be red in color and plate should be blue
 - Dimensions of the plate should be 1X1X0.01 m
 - Ball should be of diameter 0.05 m

Agentic Engineering in action – Bouncing Ball



Agents create faster than teams can verify

It writes faster
than you
review
速度失衡

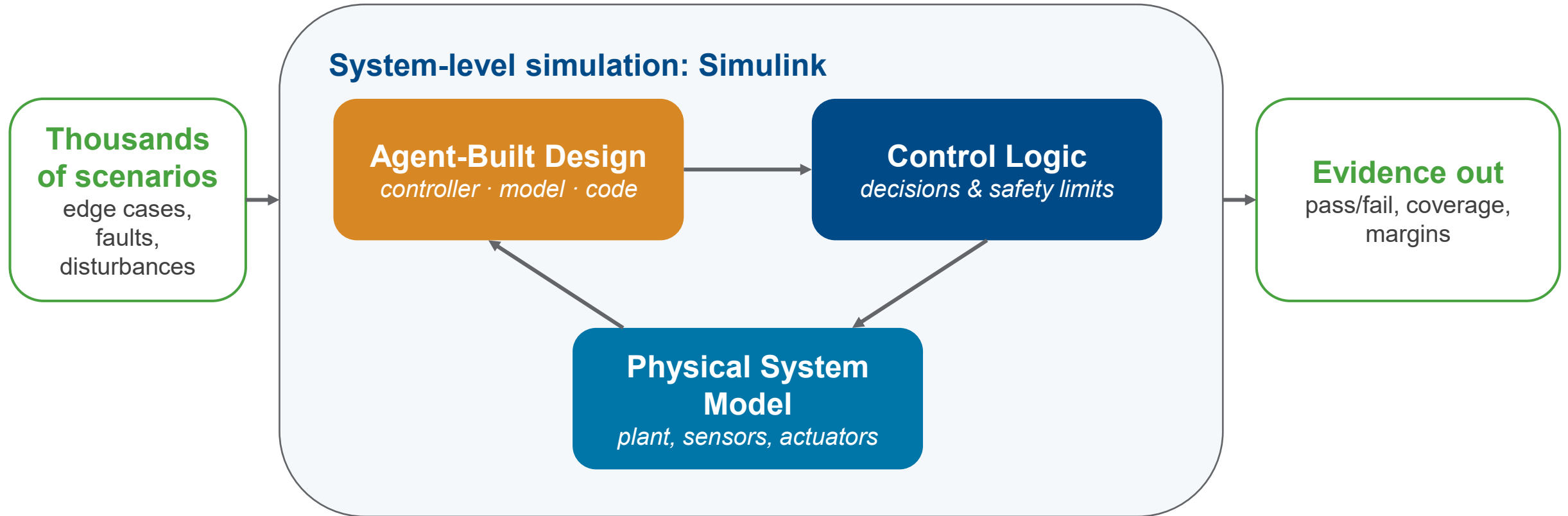
Drafts miss the
system intent
意圖失真

Pieces pass
alone, fail
together
整合問題

Who owns
what ships?
責任模糊

Regulators' primary concern is not who wrote it: human or agent, the evidence bar is the same. [ISO/PAS 8800 \(2024\)](#) is already extending functional safety to AI.

Prove the AI at system level, before hardware exists



"Fixing a problem after delivery is often 100 times more expensive than at design time." [Boehm and Basili](#), IEEE Computer, 2001.

We gave an agent a control problem and an engineering process

[A public experiment \(MATLAB Tech Talks, 2026\): an agent, a real inverted pendulum, and a Raspberry Pi](#)

1. Define requirements

swing-up and balance, written down first

2. Reuse verified models

pendulum physics from proven toolboxes

3. Design the controller

model predictive control (MPC)

4. Validate in simulation

closed-loop tests against the physics model

5. Staged testing

step by step toward hardware, every stage leaving evidence

6. Deploy to hardware

balances the real pendulum on a Raspberry Pi

“AI is most powerful when it works within proven engineering processes, helping you move faster while keeping results transparent, traceable, and trustworthy.”

[MATLAB Tech Talks, 2026](#)

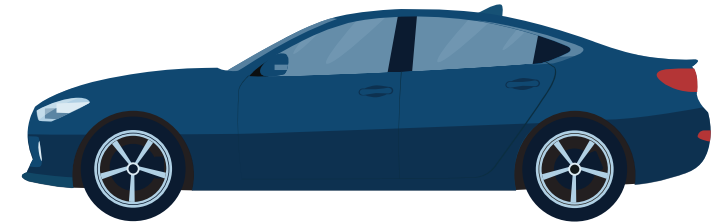
Industry Perspective – Focus on AI Literacy and Responsible Use



Validate output and
make it your own



Protect customer and
company data



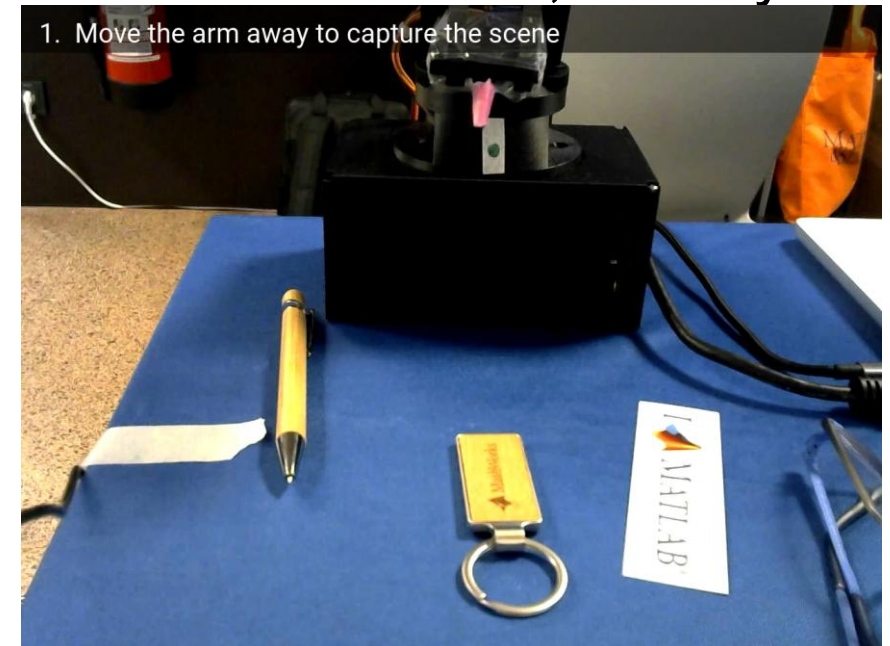
Fundamental
knowledge is required

***AI Literacy is now a fundamental skill
for all
engineers and scientists***

Something we can all try over the weekend

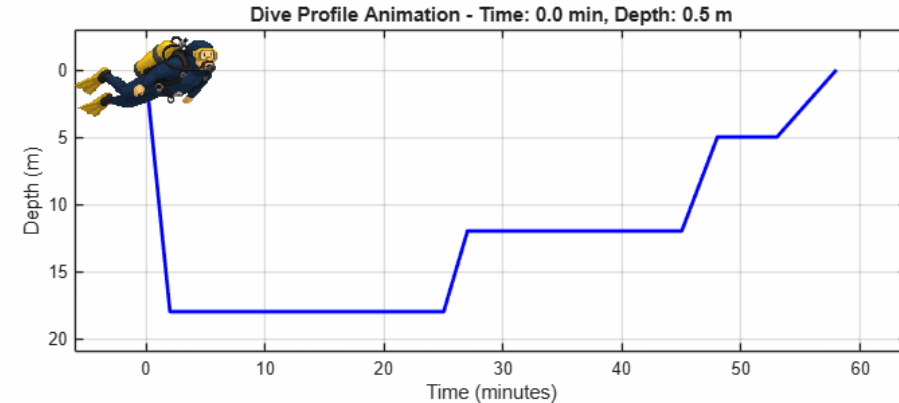
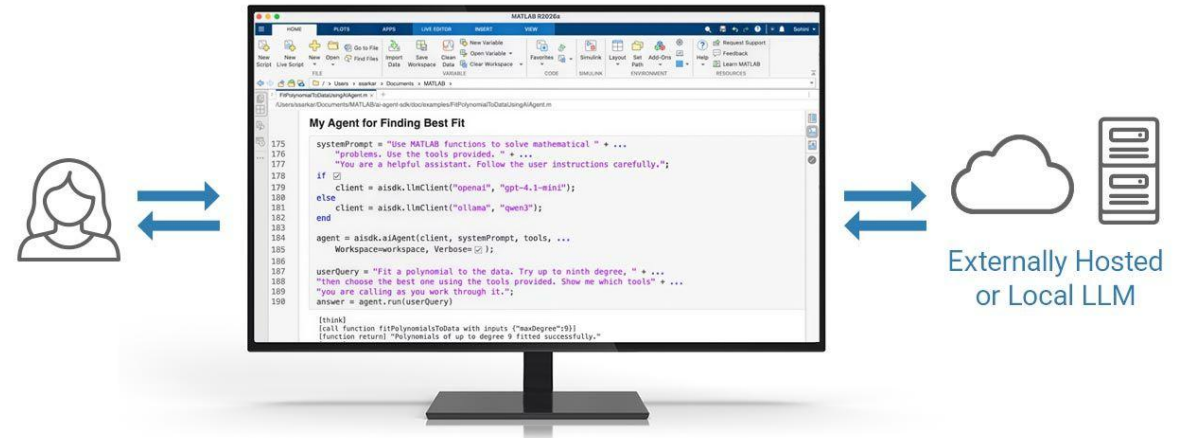
- **Educators:** Pick up one demo you want to use in your classroom & build it
- **Researchers:** Try out if you can improve the performance of your MATLAB Code or Simulink model
- **Students:** Build on what you learnt in your courses in last week, see if you are able to apply that knowledge

Have fun experimenting!



Resources

- [MATLAB Agentic Toolkit](#)
- [Simulink Agentic Toolkit](#)
- [MATLAB AI Agent SDK](#)
- [MATLAB Blogs](#)
- [Introduction: Agentic AI with MATLAB and Simulink](#)



My Scuba Diving Simulator – Part 2

Posted by [Guy Rouleau](#), July 16, 2026

Speed comes from the agent. Trust comes from the workflow

Structure enables speed. Start with one workflow

mathworks.com/ai, the pendulum Tech Talk, and the one-page handout



Tech Talk



MATLAB for AI