LESSON 1

What AI Models Are, from Chatbots to Agents

40 minutes | How Machines Learn

WHAT STUDENTS SHOULD BE ABLE TO DO

- Identify different kinds of AI model in plain terms, from generative AI (chatbots, image generators, code assistants) to recommendation systems, classifiers and AI agents
- Explain how each kind can be applied in coding, from an assistant that drafts or explains code to an agent that can plan and carry out a task
- Build a rule-based guesser in Scratch and find the cases its rules cannot cover

BEFORE THE BELL

- Students logged in at devices with Scratch open at scratch.mit.edu
- The five 'Guess the Model' examples are all on the step at once, so take them one at a time: the class calls each one before you give its answer. Answers: the next video, a recommendation system; sentence to picture, a generative model; finishing your code, a generative model (a code assistant); spotting a face, a classifier; booking the table, an agent.
- Model the first rule on the board; the rest of the build follows the same shape
- Class save routine agreed and displayed, as the guesser is saved at the end

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HOW THE LESSON RUNS

4 min	introduction	Start: What We're Building
4 min	content	Guess the Model
2 min	content	Four Kinds, and What Each Is for
2 min	content	Create a New Scratch Project
3 min	content	Your First Rule: Does It Bark?
3 min	content	Test It, and Find the Gap
3 min	content	Rule 2: Does It Purr?
3 min	content	Rule 3, and an Answer for Everything
3 min	content	Run It on the Easy Cases
4 min	content	Now the Awkward Ones
3 min	activity	Your Turn
3 min	content	Make Sense: What Worked, What Broke
2 min	content	Reflect
1 min	summary	What You Covered

TEACHING MOVES

- Keep 'Guess the Model' fast and noisy. It is a hook that draws on what students already meet daily rather than a test, so take answers and move on
- Build rule 1 on the board and ask for a prediction before you run it. The script ending silently on 'n' is the thing that makes rule 2 feel necessary
- The second wait until, the one that waits for the key to come back up, is worth naming out loud. Without it a single long press answers every question at once, and the bug looks like magic
- Do not rush the basenji. The guesser being confidently wrong is the lesson, not a detour from it, and it is what makes a model that learns from examples worth having

WHAT TO WATCH FOR

- Holding a key down rather than tapping it, so one press satisfies several wait until blocks and the cat answers instantly: point at the wait for the key release
- Adding more rules to catch the basenji and breaking a case that already worked: ask them to re-run the three easy cases after every new rule
- Expecting the guesser to be clever. It only ever does what the three rules say, which is exactly the point being made
- Building on a new sprite rather than the cat that is already there, so the say blocks appear to do nothing

DIFFERENTIATION

- Support: put the three finished rules on the board and have students build only the last one, then spend the time on the awkward cases
- Extension: add a third animal and count how many new rules it costs. The cost growing faster than the animals is the argument for learning from data
- Extension: draw the finished guesser as a flow chart and mark the path a basenji takes through it