EdSutra

Teaching guide

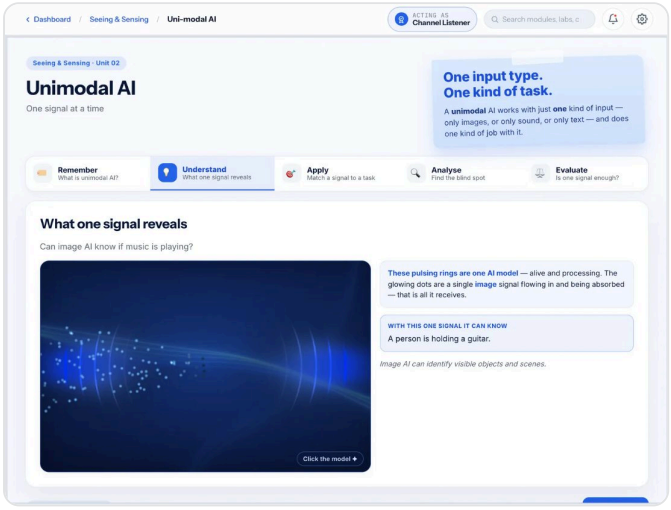
Module 02 · Seeing & Sensing · Unit 02 · Stage 2, Capabilities

Uni-modal AI

One Signal at a Time

Grades 7–10 | 12 minutes | Role: **Channel Listener**

Grade 7: About age 12–13 · Year 8 in the UK · Class 7 in India



The big idea

A unimodal AI gets one kind of signal: only a picture, only sound, only text or only a sensor reading. Each signal shows part of a situation and hides the rest, its blind spot. Sometimes one signal is enough for the job, as when typing out a voice note. Often it is not enough, or it needs caution.

The learner's job

Learners are the **Channel Listener** at Cape Marrow Station · Single Channel. You get one kind of signal today. No pictures for the microphone. No sound for the camera. Their task: find out how far one signal gets you, and where it stops.

By the end, learners can say

- I can name and identify a single input signal (image, text, audio, sensor)
- I can explain what one signal can and cannot reveal
- I can match the right signal to a task and find the missing signal
- I can judge whether one signal is enough for a given decision

Before class

- One computer or tablet for each learner or pair, with EdSutra open (this Module is part of the full EdSutra studio).
- Open the studio once on each device before class, so the Unit still runs if the internet drops.
- Play the Remember and Understand steps yourself, and click the glowing lens, so you know what learners will see.
- Write the four mysteries on the board (Guitar Clue, Tricky Word, Number Clue, Voice Note) with columns: Enough, Not enough, Needs caution.
- Best after Seeing & Sensing.
- Units open in order, and Module 1 comes first. To start a class here, switch on Open every Unit in Settings → Teachers & parents.

Words to introduce

Unimodal: Using just one kind of input, such as only images or only sound.

Mode: A kind of signal: text, image, audio, video, gesture or sensor data.

Signal: The information an AI receives, such as a photo, a sound or a reading.

Blind spot: What a signal can never tell the AI, however good the model is.

Missing signal: The extra kind of input that would fill a blind spot.

Context: Background facts about a situation that explain what a signal means.

Running the lesson 25 minutes

Open 4 min

"If an AI only gets a photo of a birthday party, what can it never know about that party?"

Before anyone clicks, read out the four mysteries: a photo of a guitar, the message "That was sick!", a 38°C reading and a voice note. For each, vote: one signal is enough, not enough, or needs caution. Return in Evaluate.

Step	What learners do	Ask the class	Listen for
1. Remember 3 min	Read the sticky note (one input type, one kind of task) and meet the six kinds of signal an AI can receive: text, image, audio, video, gesture and sensor data.	• What does "modal" mean here? • Name a tool you use that takes only one kind of signal.	A mode is a kind of signal. A unimodal AI takes in one kind and does one kind of job.
2. Understand 4 min	Watch one signal flow into the Signal Lens, a picture of one AI model, and read what that single signal lets it know: for the Guitar Clue, that a person is holding a guitar.	• The image shows a guitar. What can the AI not know from it? • Is the glowing lens a working AI, or a picture of one?	The lens only stands for a model. One signal carries part of the scene; whether music is playing is outside a photo.
3. Apply 5 min	Choose one of four mysteries and pick the single signal that fits its question. A wrong pick explains why that signal is about something else. Pairs can work through all four.	• Which signal did you pick for the Number Clue, and why? • What did the message say when you picked audio for the Guitar Clue?	Each question is about one kind of signal. Audio could hear music, but it cannot show who holds the guitar.
4. Analyze 4 min	Compare what the AI can know, its blind spot and the missing signal for the chosen mystery, such as context for the word "sick" or audio for the guitar.	• What is the blind spot in the Voice Note? • Why is context, not another sensor, the missing signal for 38°C?	Each blind spot follows from what the signal carries. A number like 38°C needs context to mean anything.
5. Evaluate 5 min	For the chosen mystery, decide whether one signal is Enough, Not enough or Needs caution, and read the feedback. Switch mysteries in Apply to judge all four.	• Why is one signal enough for the Voice Note but not for the Guitar Clue? • Look at our votes on the board. Which did we get wrong?	It depends on the job: audio is enough to type out speech, but an image cannot tell whether music is playing.

Steps follow Bloom's revised taxonomy, in the order the Unit presents them.

Deepen the thinking

Critical thinking	A text-only AI flags a friendly message as rude. What would you check before believing it?
AI thinking	Pick one mystery. Which second signal would you add, and what new blind spot might that signal bring?
Ethics and fairness	A school takes attendance with a camera-only system. Who could it miss or get wrong, and who should check its work?
Connect to life	When was a text message misunderstood because the tone was missing? Which signal would have helped?

Misconceptions to listen for

"An AI knows everything about a situation."
One signal carries only part of the picture. In the Guitar Clue, the image shows the guitar, but the sound is outside it.

"More signals are always better."
The Voice Note shows one signal can be enough when the task is narrow, like typing out what was said.

"A blind spot means the AI is broken."
A blind spot follows from what the signal carries. Every single signal has one; that is normal, not a bug.

In real life the card learners see at the end of the Unit

- A photo app can spot a guitar in your picture, but a photo can't tell whether music was playing.
- A message saying "Great job" could be praise or sarcasm. Text-only AI gets the words, not the tone.
- Live TV captions can come from speech-to-text. For writing down words, sound alone is enough.

Try it this week. Watch a minute of TV with the sound off, then listen with your eyes closed. What did each single signal miss?

Watch out for. Every single signal has a blind spot; that's normal, not a bug. Still, more signals aren't always better. Sometimes one is enough for the job.

Talk about it. Which of your senses could you manage without for a day, and what would you miss?

Exit ticket

1. What does unimodal mean?

2. What is the blind spot of an image-only AI in the Guitar Clue?

3. Give one task where a single signal is enough, and say why.

Going further

In the Computer Vision Lab, open the Hand Keypoints example: one camera signal feeds a hand tracker (no camera? a demo mode runs). With a camera, hide a hand or dim the light. What can one camera never tell it?