



AI Fundamentals

Home Builders Association of Alabama





Start with the work you already do.

Where have you already used AI this month — even when it was not labeled "AI"?



Personal

- Your phone finishing your text messages
- Maps rerouting you around a wreck on I-65
- Your bank flagging a card charge
- Photos sorting pictures of your kids by face



On the job

- Outlook suggesting replies
- QuickBooks categorizing an expense
- A subcontractor's polished email that he clearly did not write
- Zillow estimating a home's value



The questions that matter

- Where did the AI actually help?
- Where did a human still have to step in?

Hold that pair of questions all day. It is the whole course in two lines.



Almost every company is using AI. Few are using it well.

~9 in 10

organizations use AI in at least one business function

McKinsey, State of AI — Aug 2026

15%

of U.S. workers use AI daily on the job (30% at least weekly)

Gallup, 22,573 U.S. employees — May 2026

~6%

of organizations capture real bottom-line impact from it

McKinsey, State of AI — Aug 2026



And home building is behind the average. Most builders have not adopted AI in any meaningful way. What adoption exists is concentrated in marketing and customer communication — and it favors the larger companies. The gap between "my company uses AI" and "I use AI" is the opportunity — and it is still open.



The kinds of AI you will hear about — in one sentence each.

Term	What it means	In a builder's world
AI	Software that does thinking-type work: reading, sorting, predicting, writing.	<i>The umbrella word. Everything below is a kind of AI.</i>
Machine learning	Learns patterns from examples instead of following rules a programmer typed.	<i>QuickBooks learning that "84 Lumber" files under Materials.</i>
Deep learning	Machine learning with many stacked layers. Harder problems, same idea.	<i>Your phone unlocking on your face. Photo apps finding your kids.</i>
Generative AI	Creates something new from a prompt — text, images, plans, code.	<i>A first draft of a buyer update email or a listing description.</i>
Large language model	The generative engine behind ChatGPT, Copilot, Gemini, Claude. Predicts language.	<i>The thing you will type into all day today.</i>
Agentic AI	AI that takes actions across tools, not just produces text. The newest layer.	<i>Reads an email, updates the schedule, drafts the reply. Coming to your software.</i>
Automation	Repeatable steps a system runs without you. May or may not include AI.	<i>The auto-reminder your scheduling app sends. That is a rule, not AI.</i>



Six words for using it.

Term	What it means	Why a builder cares
Prompt	What you type: instructions, context, and the material you give it.	<i>The one part you fully control. A whole session on it before lunch.</i>
Training data	Everything the model learned from before you showed up.	<i>It does not include your company, your people, your projects, or your warranty.</i>
Hallucination	A confident, fluent, wrong answer. A feature of how it works, not a bug.	<i>A code section number that does not exist. A stud count from a plan it never saw.</i>
Token	The unit a model reads and bills in. About three-quarters of a word.	<i>A one-page daily report is roughly 500 tokens. That is how usage gets priced.</i>
Context window	How much the model can hold in view at once, measured in tokens.	<i>Big enough today to hold your whole spec book — if you paste it in.</i>
RAG	Retrieval-augmented generation: the tool looks up your documents before it answers.	<i>The grown-up fix for "it doesn't know my warranty." Ask vendors if they use it.</i>

If you can explain these thirteen words to your office manager on Monday, you understand AI better than most of the people selling it to you.



Three ways a machine learns — and where each shows up in your business.



The Teacher

Supervised learning

- Shown examples with the right answers attached
- Learns by comparing its guess to the answer key

In your business

- Your email spam filter
- Bookkeeping software learning where an expense belongs



The Explorer

Unsupervised learning

- Given a pile of data with no answers
- Finds the groupings on its own

In your business

- A streaming service grouping viewers with similar tastes
- Zillow grouping similar neighborhoods



The Gamer

Reinforcement learning

- Learns by trial and error
- Reward for a good move, penalty for a bad one

In your business

- Delivery apps learning which routes finish fastest
- Game-playing AI that got good by playing itself millions of times

The chatbots you will use today were built with a mix of all three — and then trained on language.



Train a machine in two minutes. With a hard hat.



The demo

- Open Teachable Machine · new image project
- Class 1 = "Hard hat ON" — record about 20 seconds on the webcam
- Class 2 = "No hard hat" — record about 20 seconds
- Train the model — about 20 seconds
- Watch it classify, live



What to watch for

- Nobody wrote a rule about what a hard hat looks like
- It had never seen any of our faces until one minute ago
- More examples make it better — 20 seconds beats 5

If we show it a ball cap it has never learned, it still answers — confidently. The same failure you will see from a chatbot.

teachablemachine.withgoogle.com · free · no account needed · training happens in the browser



Two kinds of AI. Keep them straight.



General-purpose chatbots

ChatGPT · Copilot · Gemini · Claude

Remarkably good with WORDS

Writing, rewriting, summarizing, explaining, organizing

Free or cheap to start. Anyone can begin today.

What we use all day today.



Specialized construction software

Takeoff & estimating platforms, scheduling tools

Built to MEASURE and COUNT

Reads scale, counts symbols across a sheet set, quantifies from plans

Paid tools. This is what actually performs a takeoff.

Not the current topic — but know the line.

Rule for the day: words go to the chatbot. Measuring goes to the software — or the estimator.



An LLM predicts the next word, over and over, until an answer appears.

1

Prompt

You give it instructions, context, and material. "Act as a warranty coordinator. Using this summary, reply to a homeowner about drywall cracks..."

2

Predict

It produces the most likely next word given everything before it — then the next, then the next. Thousands of times.

3

Output

A draft email, a table, a checklist. Fluent, formatted, fast.

4

Review

A person checks facts, numbers, tone, and fit. This step is not optional — it is where your judgment lives.

Why this explains everything: it is predicting what a good answer looks like, not looking one up. That is why it writes a beautiful buyer email in seconds — and why it will also write a beautiful, wrong code citation. Same mechanism, both times.



It forecasts. It does not look things up.



A search engine is a librarian

Finds the page someone already wrote. Same question, same answer.

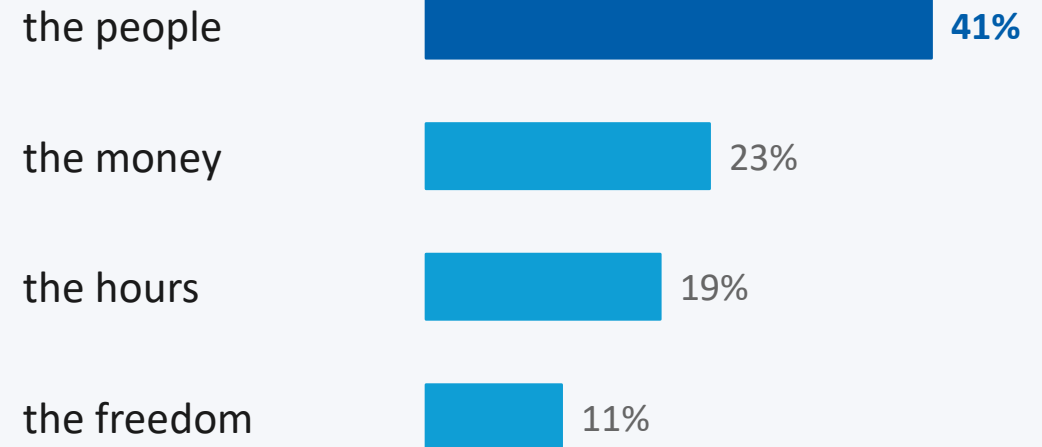


A chatbot is a forecaster

Estimates from patterns. Same question, a slightly different answer each time — and it always sounds sure.

The best thing about this job is ____

What it thinks comes next



It picks a likely word. Then it does it again for the next one.



It knows exactly two things.

1

What it was trained on

- Everything it read before a cutoff date
- Nothing after that date exists for it
- It learns nothing new while you use it — tomorrow it starts from zero

2

What is in front of it right now

- Your prompt, the conversation so far, anything you pasted in
- This is the context window

If it is not in the window, the model does not know it.

The rule: if you want it to work from your facts, put them in the window.



A polished answer can still be wrong. Here is where it happens at work.



Numbers it was not given

Quantities, prices, square footage, dates. If it is not in your prompt, it is guessed.



Codes and regulations

Confident section numbers that do not exist, or are from the wrong edition or the wrong state.



Outdated assumptions

Material costs, rates, product lines — its knowledge has a cutoff date and no idea what Alabama looks like this month.



Your company's specifics

It has never seen your warranty, your price book, or your people. It will invent them if you let it.



Confident tone hiding uncertainty

It never sounds unsure. That is a style, not a signal of accuracy.

"Would you put your name on it exactly as written?"

The one-question test before anything goes out the door.



Low, medium, or high stakes? Three questions decide how much checking a task needs.

1 What goes in?

Public or general info — or a buyer's financials, a contract, an employee record?

2 Who sees the output?

An internal draft you will edit — or a buyer, an inspector, a lender, the public?

3 Can it be undone?

Delete and retry — or a signed change order, a posted ad, a code violation?

LOW

Draft and go

Toolbox talk draft · buyer FAQ · social caption · meeting notes → actions · rewriting your own email

MEDIUM

Draft, then a second set of eyes

Delay notice to a buyer · warranty reply · listing copy (fair-housing check) · job description · scope of work for a sub

HIGH

AI organizes, a person decides

Change-order dollar amounts · code questions · contract language · a buyer's private data · takeoffs



AI is not magic. It is a new work system — and you already know how to run one.



Two kinds of AI

Words to the chatbot. Measuring to the software or the estimator.



It predicts, it does not look up

That is why it is fast, fluent — and sometimes confidently wrong.



The fit test

What goes in, who sees it, can it be undone → green, amber, red.



One question

"Would you put your name on it exactly as written?"



Try these yourself. Point your phone camera at any code.



Teachable Machine

Train your own classifier, free, in the browser — the hard-hat demo you just watched.

teachablemachine.withgoogle.com



Transformer Explainer

Watch a real model pick the next word, and see the odds it gave every option.

poloclub.github.io/transformer-explainer



Quick, Draw!

Two minutes of fun that shows how a model learns from millions of labeled examples.

quickdraw.withgoogle.com



Google Labs

Google's current AI experiments — a browsable place to see what these tools can do.

labs.google



NIST AI Risk Framework

The Govern / Map / Measure / Manage cycle behind the responsible-use hour.

nist.gov/itl/ai-risk-management-framework

All five links were checked and working the week of the workshop. Every one is free and needs no account.