

AI: Myth Busting

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AI and Higher Education

“It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of light, it was the season of darkness, it was the spring of hope, it was the winter of despair...”

- Charles Dickens, A Tale of Two Cities



Not one AI



OpenAI ChatGPT



Khan
Academy

ANTHROPIC

 Meta

 open source

 COPILOT

 Gemini

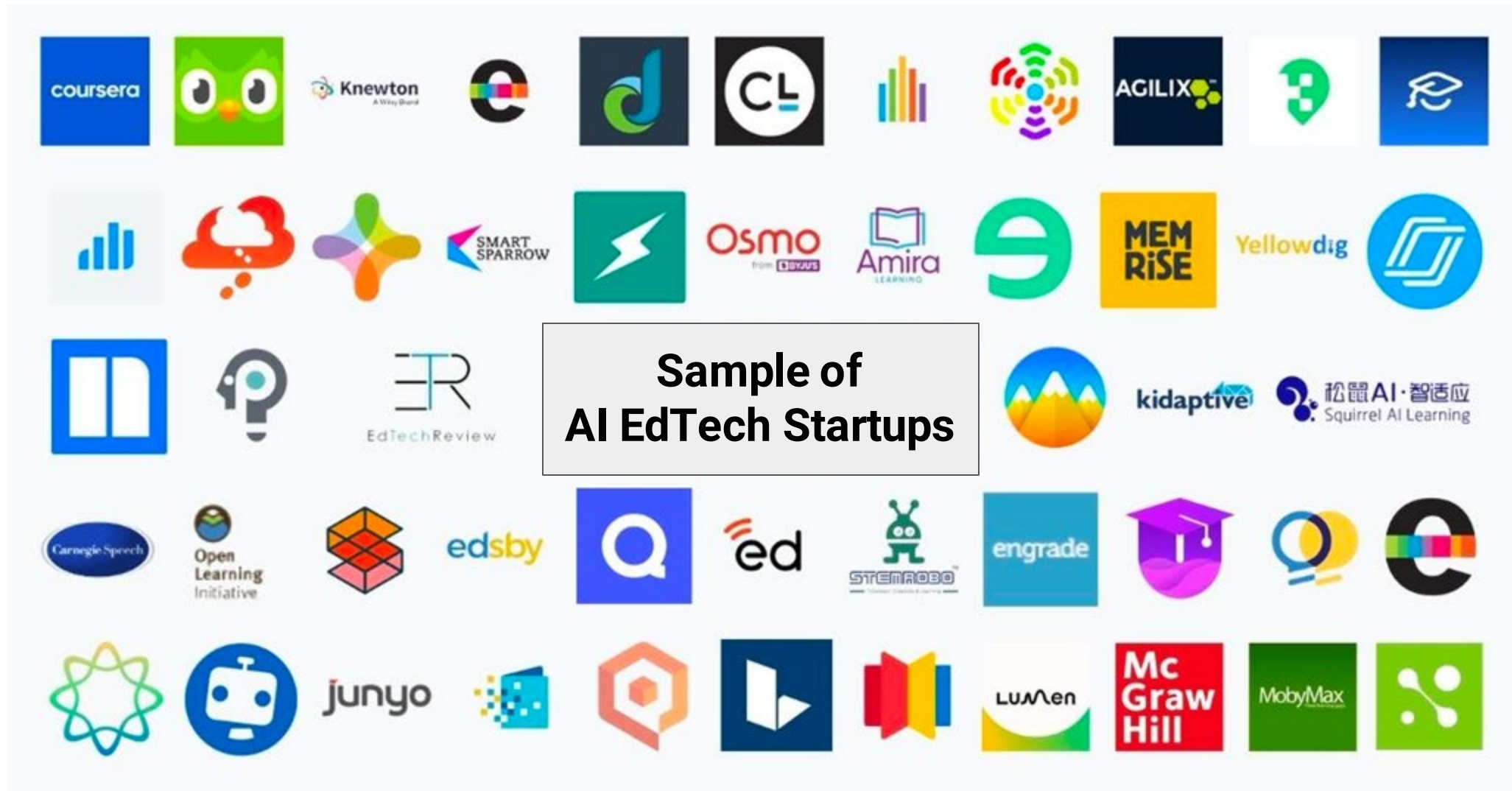


 perplexity

Not one use

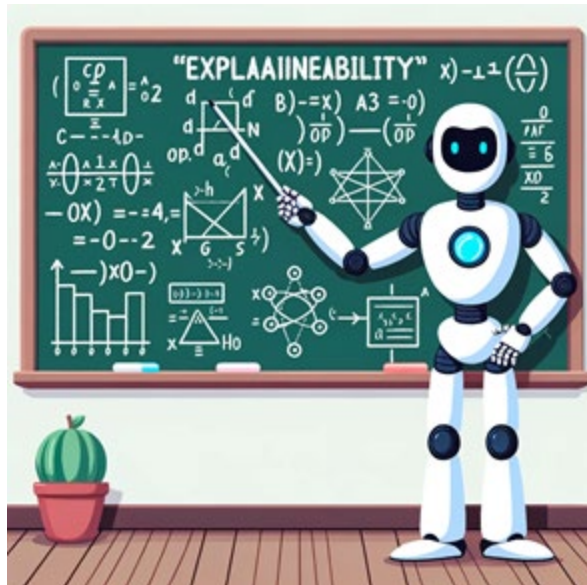


Not one application



Duality of AI: High attention concerns

- Technical challenges
 - Biases
 - Transparency
 - Explainability
 - Data privacy
 - Data ownership
- Environmental concerns
- Geopolitical balances
- Trustworthy AI
- Inequality and access
- Requires lots (and lots) of data, sometimes taken without explicit permission
- AI Alignment
 - Human-centered AI and whose goals
 - Small possibility, but worth investing in



Duality of AI: Lower attention concerns

- Human agency
 - AI gives “answers” (removes choice)
 - Hyperfocused on efficiency
 - Humans add value, depth, quality, interest, creativity
 - We could regress to the mean
 - Everything could become average, homogeneous, dull
- Anthropomorphism
 - Deception
 - Clarity of responsibility
 - What is real?
- Model collapse
 - Self-reference spiral
 - AI content > Human content

Duality of AI: Opportunities

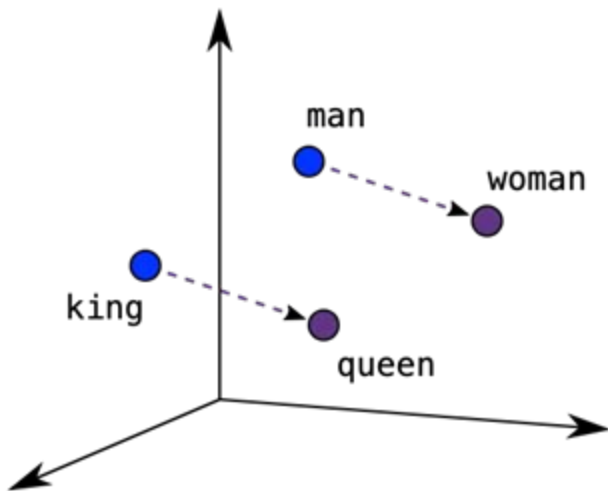
- Engagement
 - Interactive experiences, simulations, etc.
 - e.g., chat with historical figure in your discipline
- Personalization
 - e.g., customer service chatbots
- Accessibility
 - e.g., summarizing legal documents
- Integrations
 - MS Word, email, phones, etc.
 - Zoom (e.g., summarize meetings)
 - Google Docs
- Instructors can focus on...
 - Critical thinking
 - Meta-cognition
 - Problem solving



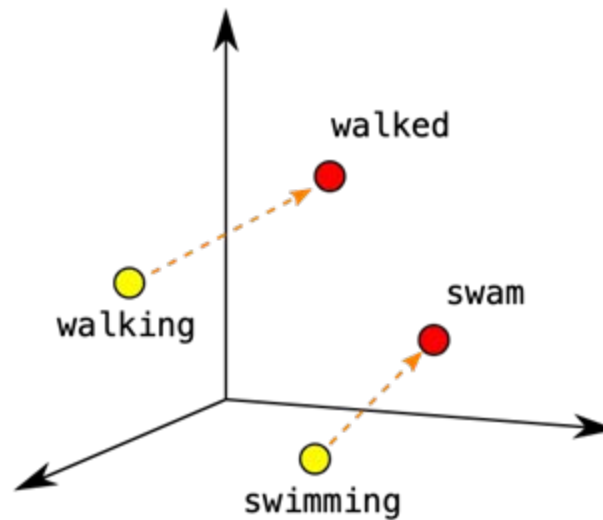
Sample of My Uses

- Explain new concepts
- Find and access content
- Explain technical content
- Brainstorm ideas
- Evaluate new ideas
- Provide counter arguments
- Offer minority viewpoints
- Check grammar, vocab, clarity
- Offer catchy titles
- Summarize text
- Shorten long text to make word count
- Provide historical perspectives
- Test my logic
- Index a book you wrote
- Critique my understanding of a topic
- Provide (not make) edits
- Ask me questions (reverse roles)
- Provide many (many) examples
- Translate text
- Create an agenda
- Format references
- Write, explain, translate, debug code
- Non-research Data
 - Extract from text, classify, transform, sentiment analysis, create synthetic/dummy data
- Develop assessment items
- Be my reading assistant
- Answer questions about an image

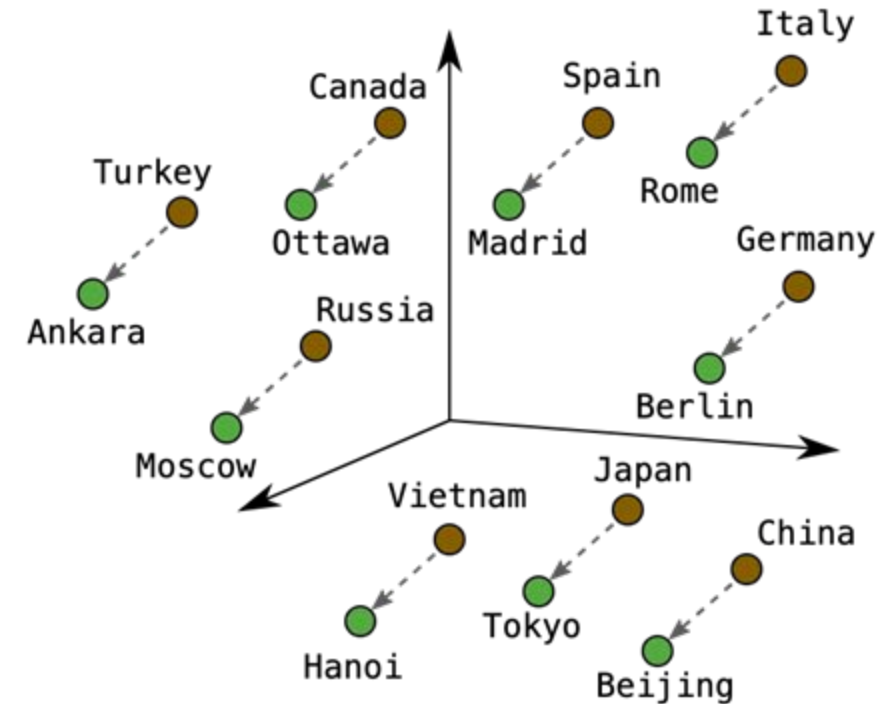
You don't have to be computer scientist



Male-Female

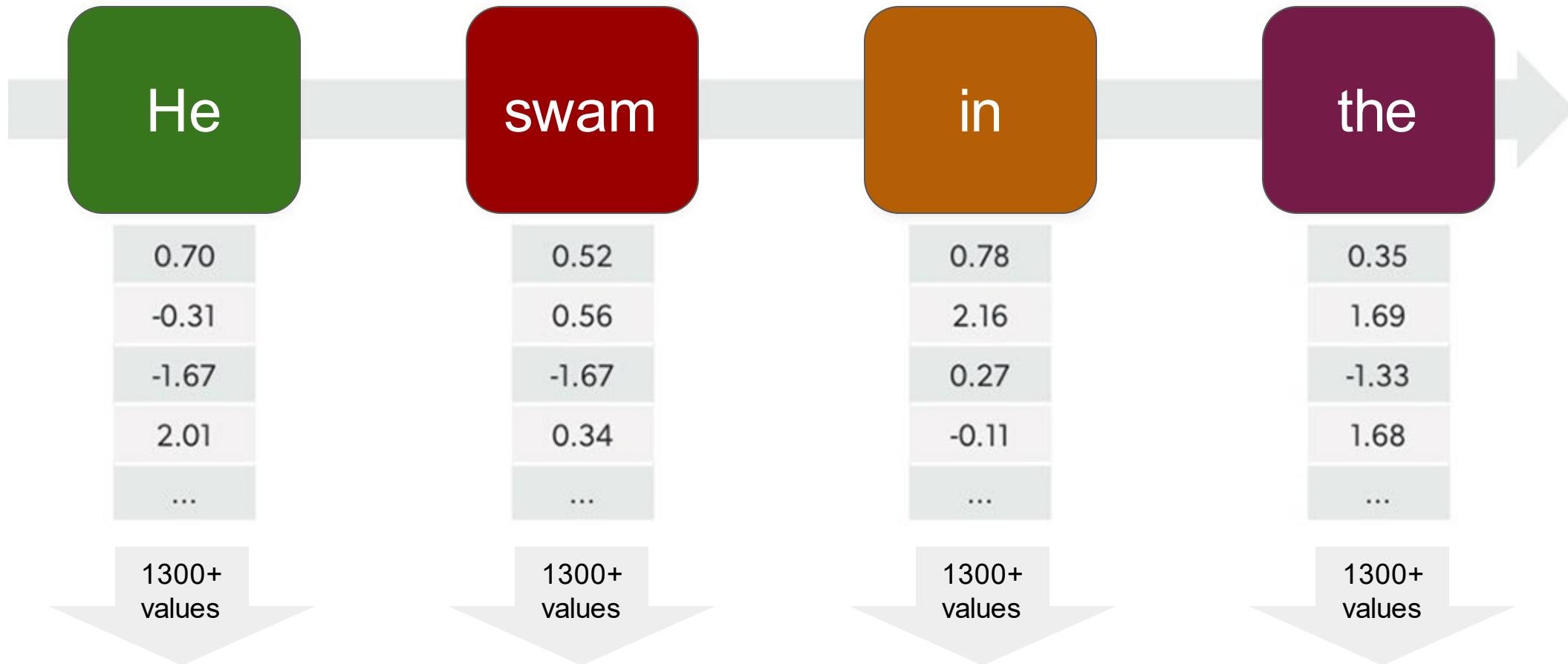


Verb Tense



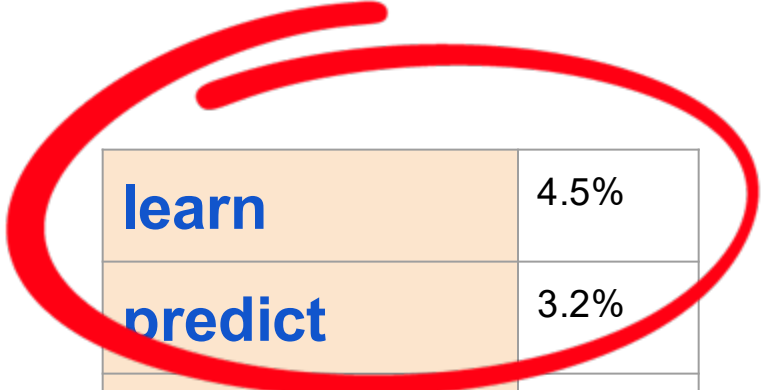
Country-Capital

Word Embeddings



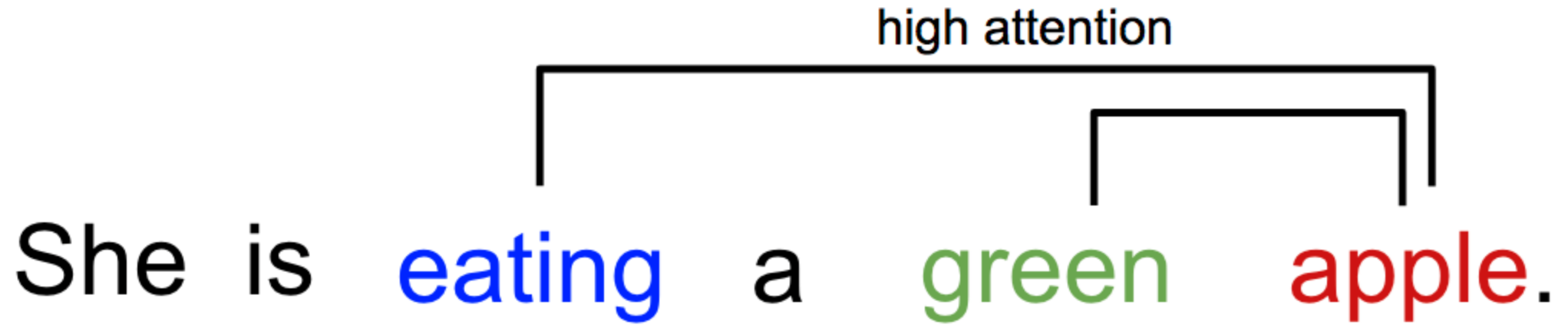
Word Prediction Task

The best thing about AI is its ability to



learn	4.5%
predict	3.2%
make	1.2%
understand	1.1%
do	0.9%

Context is Key



More Context Helps

Alana was sitting on **Waikiki** beach.

She is **eating** a **green** ???

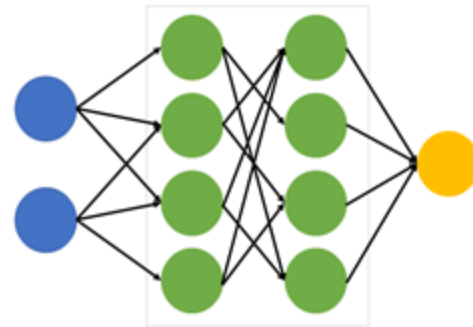


The diagram consists of several horizontal and vertical lines. A long horizontal line connects the word 'eating' in the second sentence to the word 'beach' in the first sentence. Another horizontal line connects the word 'green' in the second sentence to the word 'beach' in the first sentence. There are also vertical lines extending from the words 'Waikiki' and 'beach' in the first sentence, and from the word 'green' in the second sentence, which connect to a common vertical line on the right side of the diagram.

Pre-Training



**Very Large
Unlabeled
Dataset**



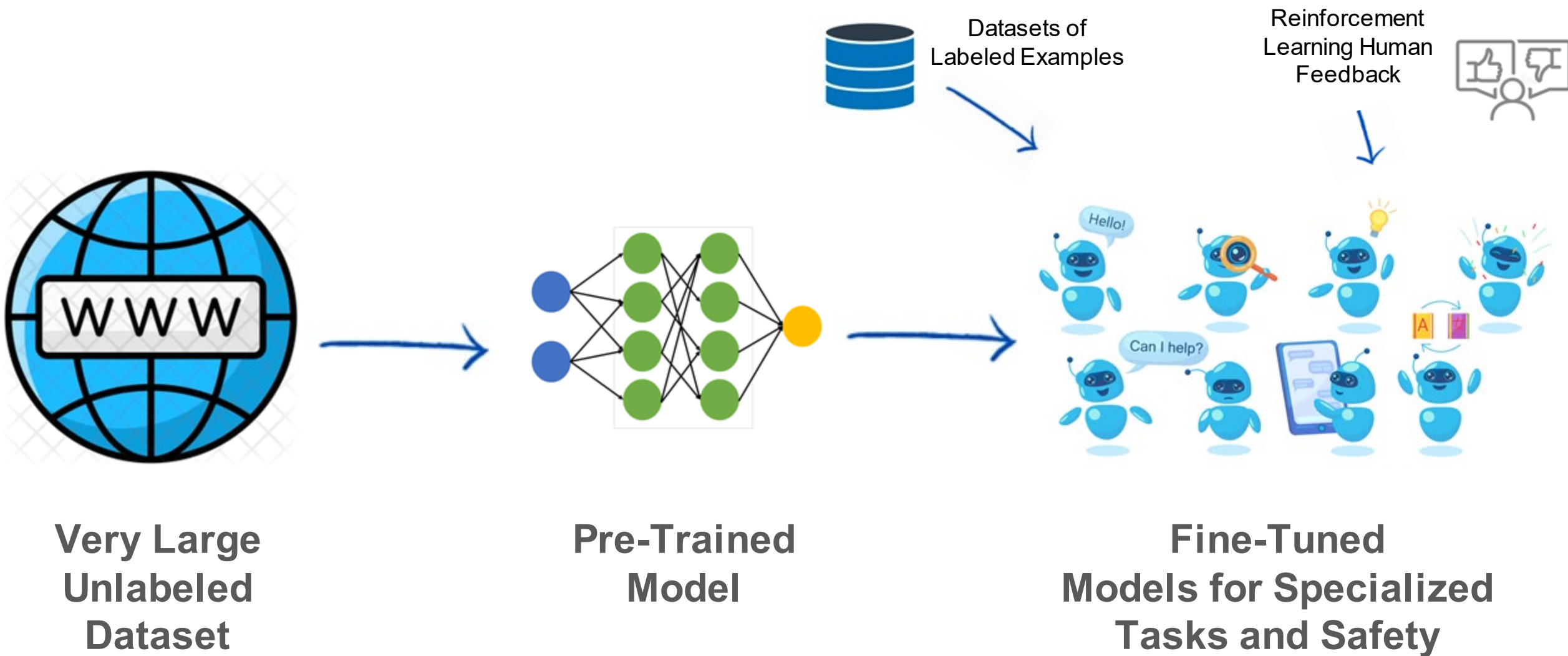
**Pre-Trained
Model**

(syntax, grammar, patterns,
relationships, semantics
stored as neural network)



- Text generation
- Translation
- Question answering
- Summarization
- Sentiment analysis
- Classification

Fine-Tuning



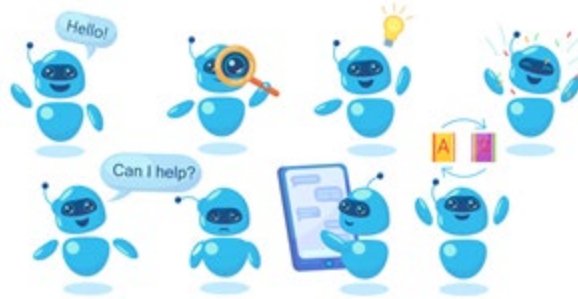
You



Very Large
Unlabeled
Dataset



Pre-Trained
Model

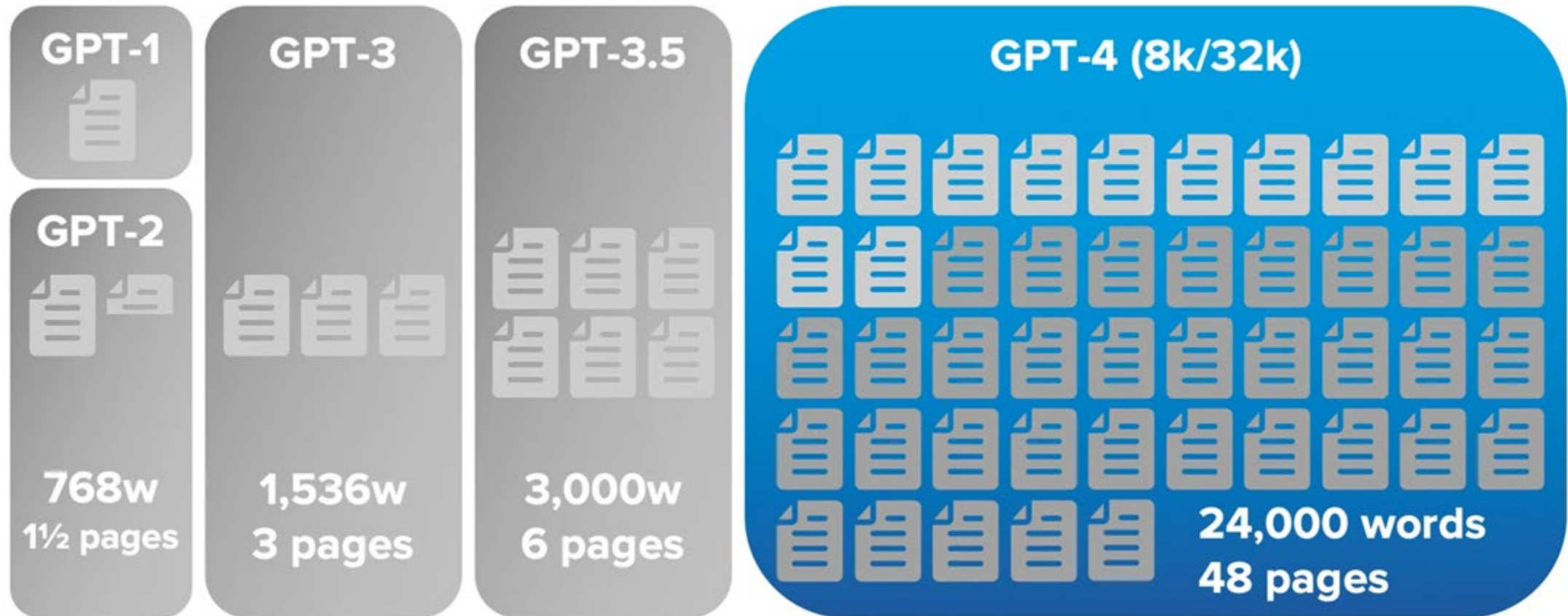


Fine-Tuned
Models



Alana was sitting
on **Waikiki** beach.
She is **eating** a
green...

Context (short term memory) Size



Not to scale. Using rounded figures of 1 token = 0.75 words (e.g. 32,000 tokens = 24,000 words), 500 words = 1 page. Paper icons created by Anggara - Flaticon. Alan D. Thompson, March 2023. <https://lifearchitext.ai/gpt-4/>

User Decisions

1. Which LLM?



2. Set the “temperature”



>1.0 Diverse &
Creative

<1.0 Deterministic &
Uninspired

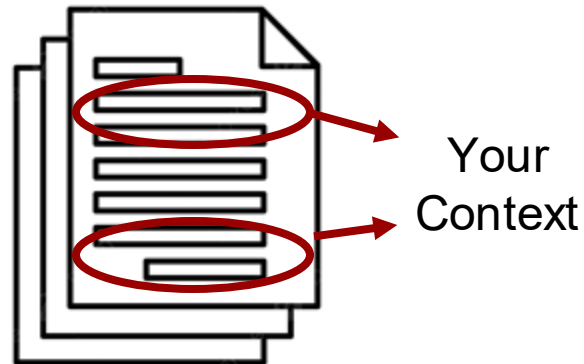
3. Adding context to your prompts

You are a **poet**. Alana was sitting on **Waikiki beach**. She is **eating** a **green**...

3. Uploading a small-ish file to the context



4. Connecting large file to context (RAG)

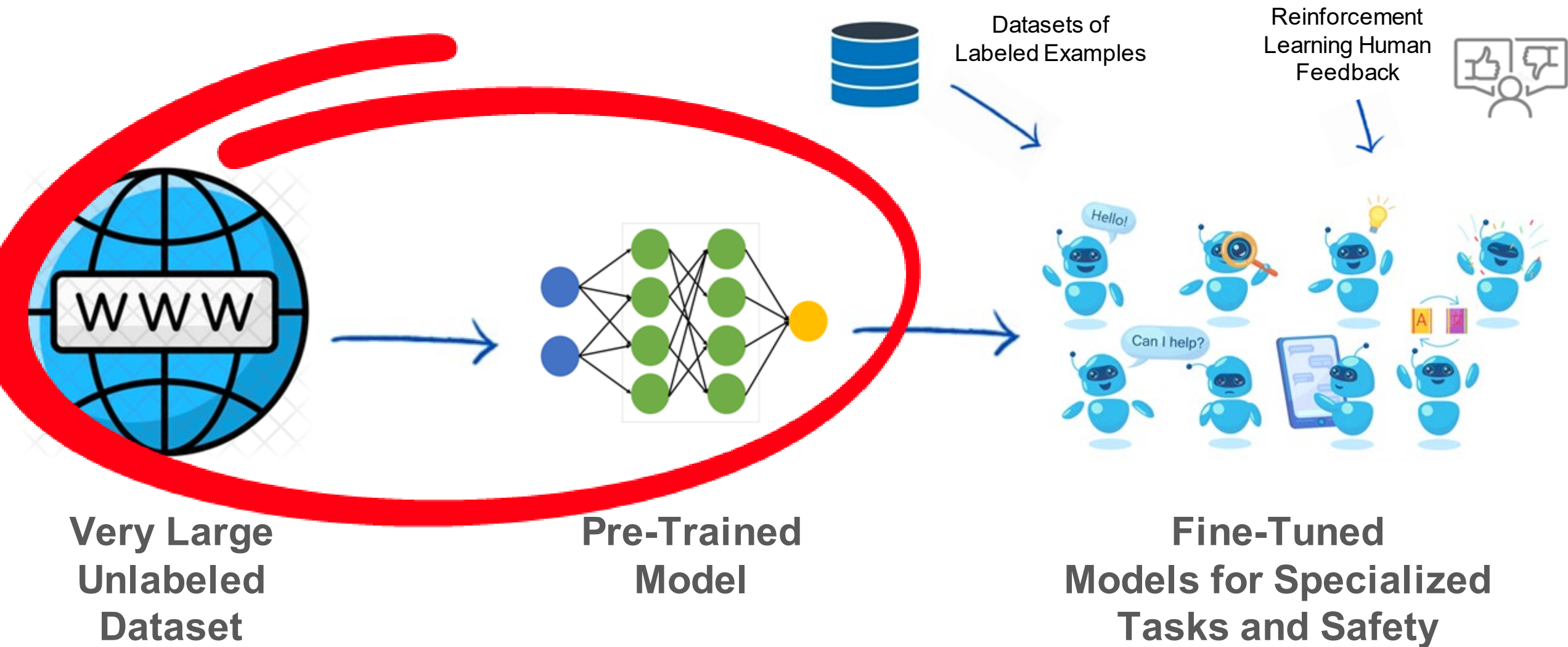


5. Fine-Tuning (transfer learning)

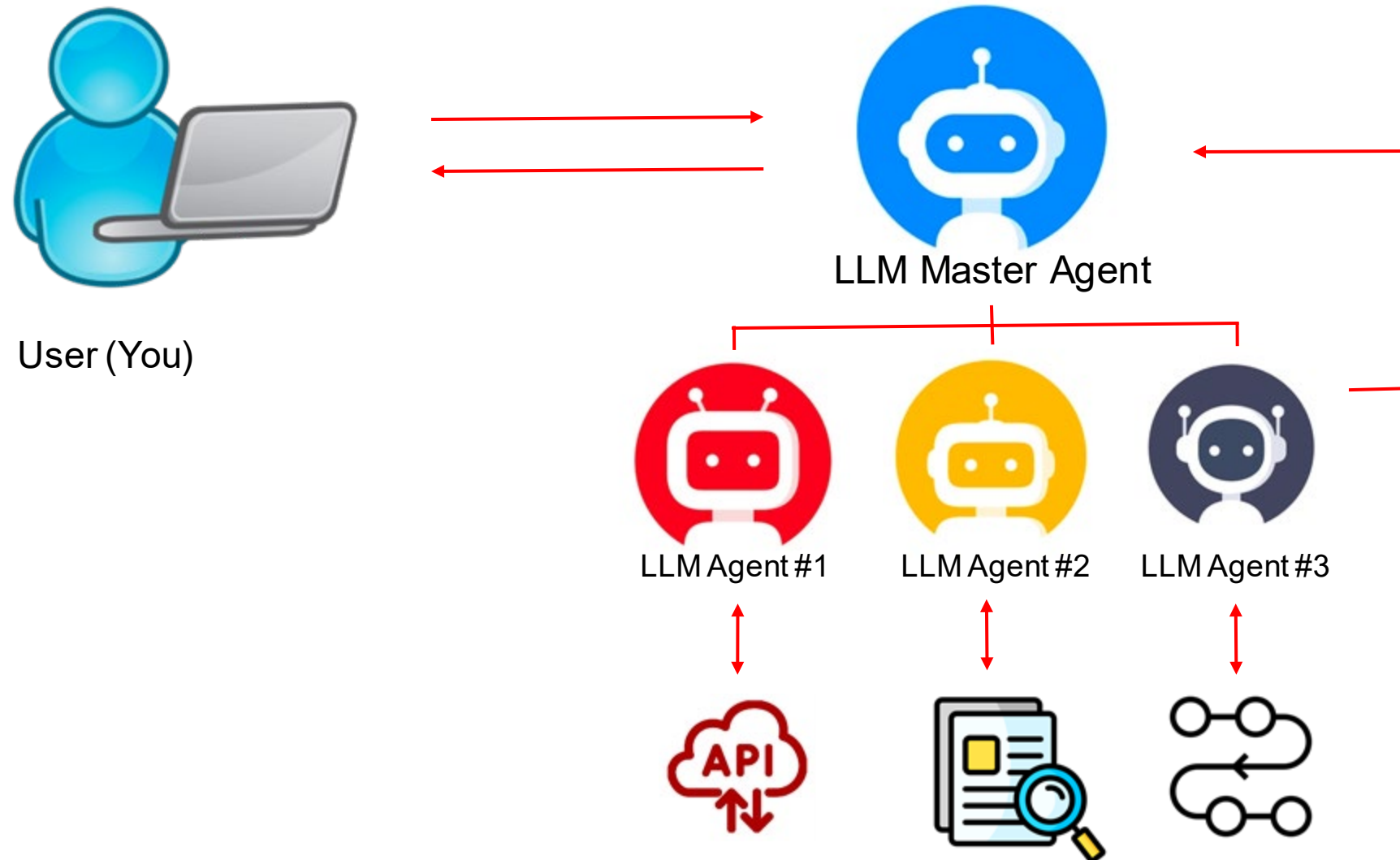


Dataset of Labeled
Examples

Open Source Models



Agents



Empowering People

“So this is just another tool to allow them to spend their time where it really needs to be spent. And that's with our customers. So instead of spending hours looking through the regs, trying to figure out, can I do this, can't I do this, why they can go directly to it, type in their questions, take something that maybe used to take hours, complete it in a few minutes, and then move on to, you know, the true meaning of vocational rehabilitation.”

~ Cassie Villegas, Outgoing Interim Director of Washington General

Thank You

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