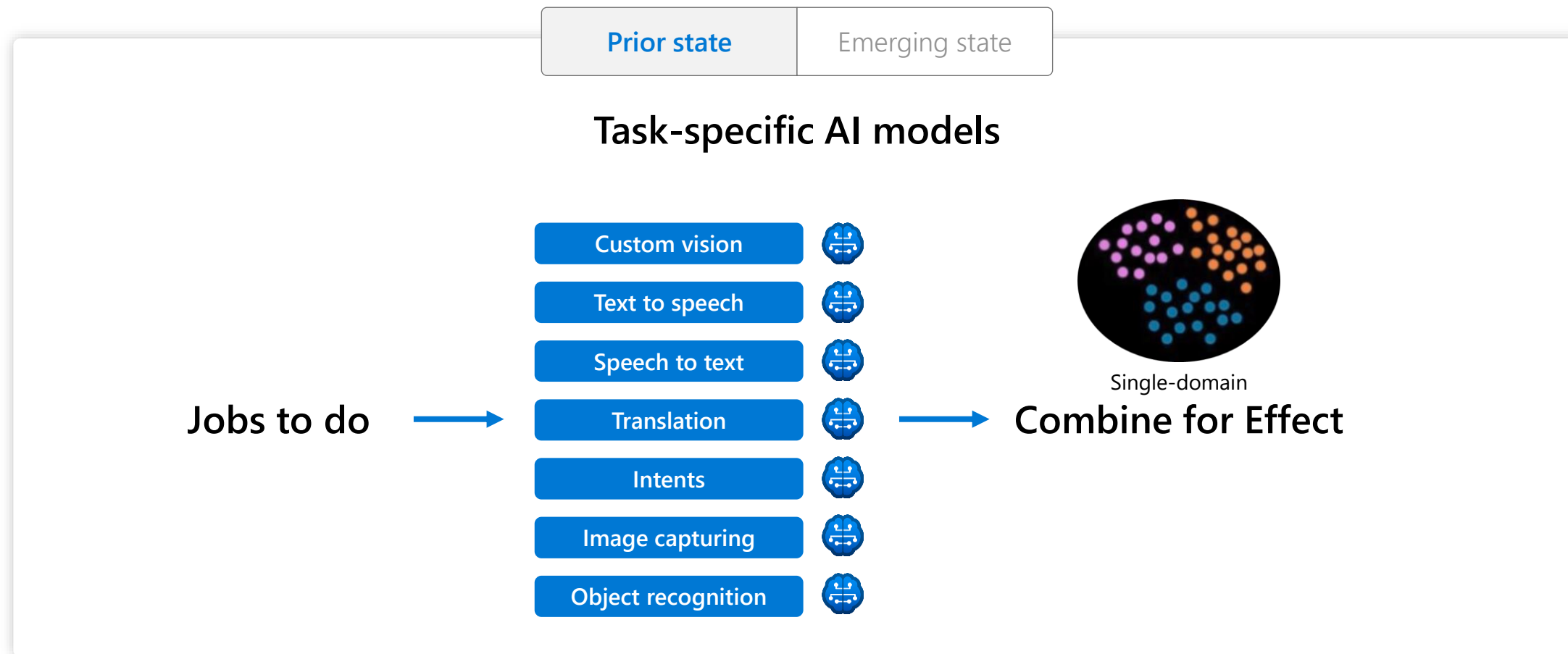


We're moving from narrow to general AI



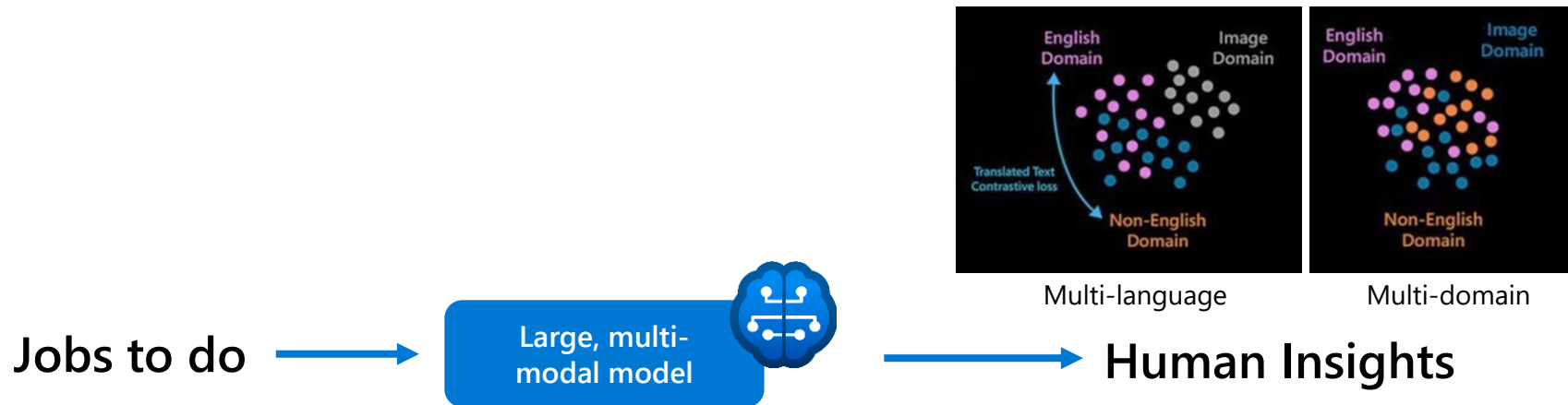
Requires highly structured data | Labor and integration intensive to set up | Limited to smaller, more tractable problems

We're moving from narrow to general AI

Prior state

Emerging state

General-purpose AI models



Responsive to task-based prompting | Train on entirety of enterprise data | Addresses unstructured problems, unlabeled data

Chat-GPT: Large Language Models Hit Public Consciousness

ChatGPT

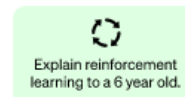
Examples	Capabilities	Limitations
"Explain quantum computing in simple terms" →	Remembers what user said earlier in the conversation	May occasionally generate incorrect information
"Got any creative ideas for a 10 year old's birthday?" →	Allows user to provide follow-up corrections	May occasionally produce harmful instructions or biased content
"How do I make an HTTP request in Javascript?" →	Trained to decline inappropriate requests	Limited knowledge of world and events after 2021

Chat-GPT is a purpose-tuned version of GPT-3

Step 1

Collect demonstration data and train a supervised policy.

A prompt is sampled from our prompt dataset.



A labeler demonstrates the desired output behavior.

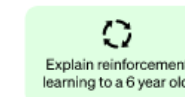


This data is used to fine-tune GPT-3.5 with supervised learning.

Step 2

Collect comparison data and train a reward model.

A prompt and several model outputs are sampled.



A labeler ranks the outputs from best to worst.



This data is used to train our reward model.



Step 3

Optimize a policy against the reward model using the PPO reinforcement learning algorithm.

A new prompt is sampled from the dataset.



The PPO model is initialized from the supervised policy.



The policy generates an output.



The reward model calculates a reward for the output.



The reward is used to update the policy using PPO.



Model Progress – Major Model Revisions

Prompt: Describe the evolution of United States Defense Strategy from 1970 to 2020

2018 (GPT)

1970: the world - wide threat from the united states of america. " there were some disagreements, " president john b. kennedy said. the president began, " in the year of 2012, united states army - based in the united states - ordered u.s. army to invade china, china, and europe. as it was planning for the united states, the united states of america, " the president said. the president paused. " the united states was ordered to defend the united states, " he finished.

(and so on)

2019 (GPT-2)

1970-1980: Strategic Plans of the U. S . Department of Defense in the Middle East; A Comprehensive Strategic Plan. Washington : U. S. Government Printing Office, 1978. 1980-1990 : A Summary of U . S. Defense Policy in the Middle East ; A New Approach to the United States Defense of the Persian Gulf Region . Washington : U . S. Government Printing Office, 1980. 1990-2005 : U. S. National Defense Strategy and National Security Strategy . 2 vols . Washington : Government Printing Office, U. S . . Vol

(and so on)

2022 (GPT-3.5 davinci-003)

1970-1980: During this period, the United States adopted a strategy of Mutual Assured Destruction (MAD). MAD was based on the premise that in the event of a nuclear attack by one side, the other side would respond with a devastating counterattack. The US also maintained a large conventional military force to deter potential adversaries and support allies in the event of a conflict.

1980-1990: The US shifted its focus to the development of high-tech weapons systems, such as the "Star Wars" missile defense system, as well as an increased emphasis on special operations forces. The US also began to deploy forces in the Persian Gulf region to protect oil supplies from the Soviet Union and its allies.





1990-2000: The end of the Cold War led to a major shift in US defense strategy. The US increased its focus on regional conflicts, such as those in the former Yugoslavia, Iraq, and Afghanistan. The US also increased its focus on counterterrorism operations, as well as the development of advanced weapons systems, such as precision-guided munitions.

2000-2020: The US has continued to focus on regional conflicts and counterterrorism operations, while also increasing its focus on cyber warfare. The US has also increased its investments in missile defense systems, such as the Terminal High Altitude Area Defense (THAAD) system. The US has also increased its focus on developing unmanned aerial vehicles (UAVs) and other autonomous systems to address emerging threats.

State of the Art – What is easy, what isn't?

Quality	Task	Notes
Green	Pro/Con Argument	Reasonable arguments in favor of and in opposition to topics can be created, with connections to a broader context.
Green	Hypothetical Reasoning	Myriad ideas can be generated, and the only downside is it sometimes takes multiple iterations as long lists can become repetitive and cycle the same idea "format."
Green	Summarization	The models are very performant at summarizing content.
Green	Story Generation	The models can create stories from a sparse prompt, as well as taking a longer arc and detailing it out.
Green	Personalization	These models can communicate in personalized styles, using colloquial language.
Green	Simplify/Clarify	Simplifying language and clarifying terms are highly performant interactions.
Light Green	Learn about/see also	While some of the information recall risks are present, these models generally perform very well at supporting in-depth and interactive learning interactions.
Light Green	Elaboration	Much like learning about, elaborating on a topic is generally quite good with some information recall risks.
Light Green	Intention Discovery	These models are surprisingly good at inferring intent from a narrative, however there are gaps in it's knowledge of human behavior when exploring esoteric reasons. Extensive testing is highly encouraged.
Yellow	Information Recall	Information gives reasonably clear factual recounting of topics that are well-represented in the training corpus. For Wikipedia-like topical exploration, and asking relevant follow-ups on well documented topics, this performs well. For recall of recent events, controversial opinion-based topics, or detailed sequences in history, it's middling. There is a big risk when information is not trained, as the models will hallucinate without warning.
Red	Source Citations	These models are very prone to hallucinate sources, if sourcing is important it must be tied to the provided context explicitly or false sources and false links will be created that can be quite convincing.

Using Large Language Models In Enterprise

Known Limitations	Solution	Tech
 Problem 1 – Current models do not allow training on or direct use of private data, limiting applications in niche domains and raising questions of inherent inaccuracy.	Model Customization	
 Problem 2 – There are limited tools to bring point-problems into the NLP models for highly complex analysis; current approaches require white glove service and engineering point solutions.	Model Augmentation	
 Problem 3 – There are limited operations tools to maintain, and keep consumer systems updated with new models, new data, new prompts, and new integrations.	Management Services	
 Problem 4 – There are no UX/UI solutions to bring these capabilities forward as a universal experience across tools.	UX/UI Tie-in	Microsoft Enterprise Hyperscale AI Services & Ongoing Development

Introducing the new Bing

Ask real questions. Get complete answers. Chat and create.

Join the waitlist

You will receive emails about Microsoft Bing, which include offers about Microsoft, Rewards, and partner products. [Terms](#) | [Privacy](#)

Ask anything

Ask your questions – short, long or anything in between. The more precise you ask, the better the answer.

Create a 3-course menu.

Help plan my special anniversary trip.

What art ideas can I do with my kid?

Can you help me get fit?

Write a rhyming poem.

Help me plan for my fishing trip.

Model Customization

Model Augmentation

Management Services

UX/UI Tie-in