

Unleashing the power of AI to transform clinical development - today

acdm 
association for **clinical data management**

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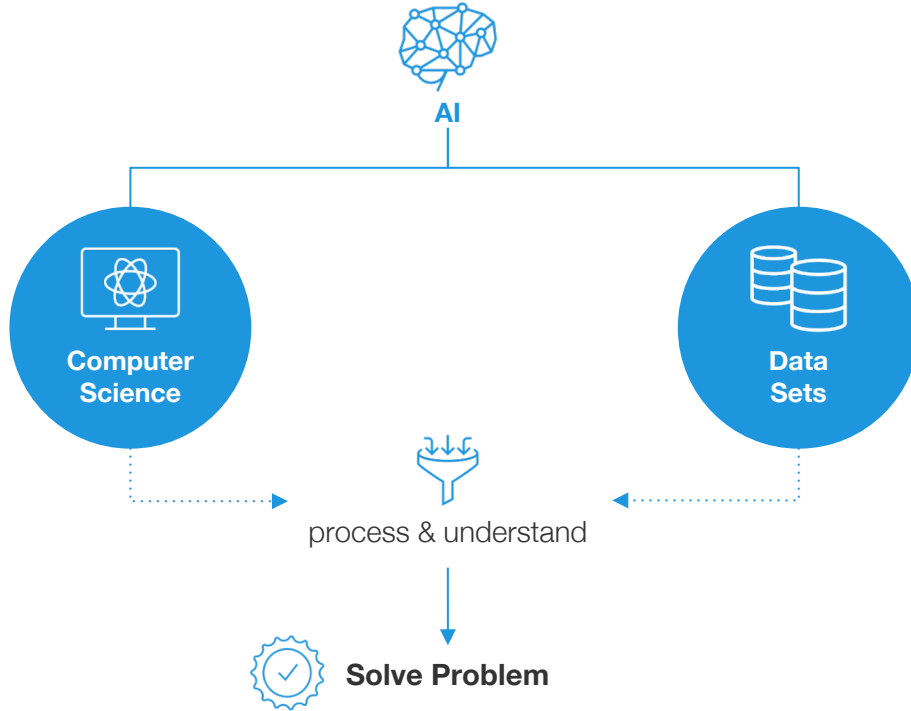




Audience Poll

How many people have
used AI or GenAI in their
day-to-day jobs?

What is artificial intelligence (AI)?



AI combines **Computer Science** and **Data Sets** to solve problems

Computer science is used to **process** and **understand** the data sets

Techniques include

- Machine learning
- Deep learning
- Natural language processing
- Generative AI

What is natural language processing (NLP)?



Natural language processing is the ability for a computer to **understand human language** as it is spoken and written

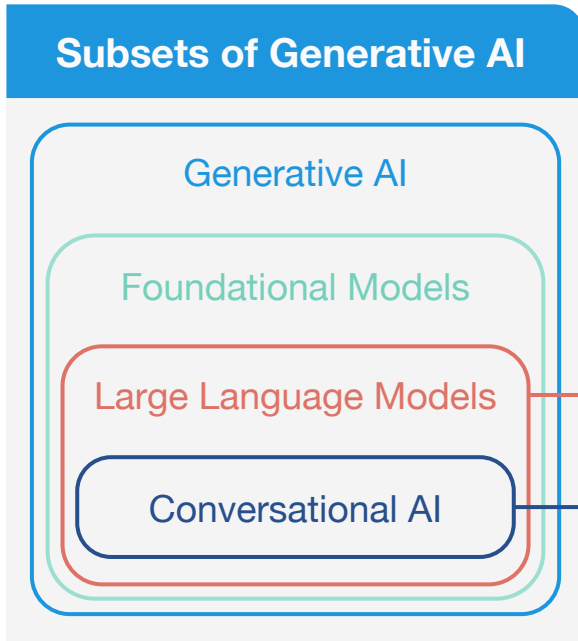
Provides **intuitive forms of communication** between humans and computers

Natural language processing includes

- Text analysis
- Natural language understanding
- Natural language generation
- Chatbots



What is generative AI (GenAI)?



Generative AI models can **generate new and original** outputs including text, images, video, and code based on the data they are trained on

Ex: GPT-4 by OpenAI, LaMDA by Google, BERT by Google, LLaMA by Meta

Ex: ChatGPT by OpenAI, BARD by Google

Generative AI image/text generation examples




Prompt: Poodle dog skate boarding near Eiffel tower

Styles: cinematic-default

Advanced Options

Generate

Image



<https://stablediffusionweb.com>



You are going to write in the style of Shakspeare reporting on daily news. News article is ANCHORAGE, Alaska (AP) — When it comes to packing on the pounds to survive an Alaska winter, this year's undisputed champ is Grazer.

Grazer, also known as Bear 128 to the fans of Fat Bear Week at Alaska's Katmai National Park and Preserve, won this year's contest, handily defeating Chunk 108,321 to 23,134 in the finals.

The annual contest, which this year drew more than 1.3 million votes from dedicated fans watching the bears live at explore.org, is way to celebrate the resiliency of the brown bears that live on the preserve on the Alaska Peninsula, which extends from the state's southwest corner toward the Aleutian Islands.



In Anchorage's chilly embrace, a tale unfolds,
Of Grazer, a bear, in winter's grip she holds.
Bear 128, by those who love Fat Bear Week well,
Proclaimed champion true, her victory doth swell.

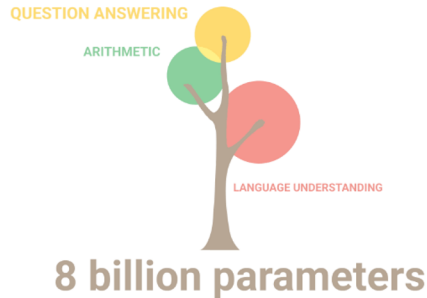
With Chunk 108,321 in final display,
In this contest of girth, 'twas Grazer's day.
A handily won triumph, as numbers declare,
Twenty-three thousand to Chunk, she did compare.

An annual contest, where fans did convene,
To cast their votes, a spectacle, unseen.
One point three million voices in resounding cheer,
From explore.org's screens, they held bears dear.

Regenerate



What are large language models?

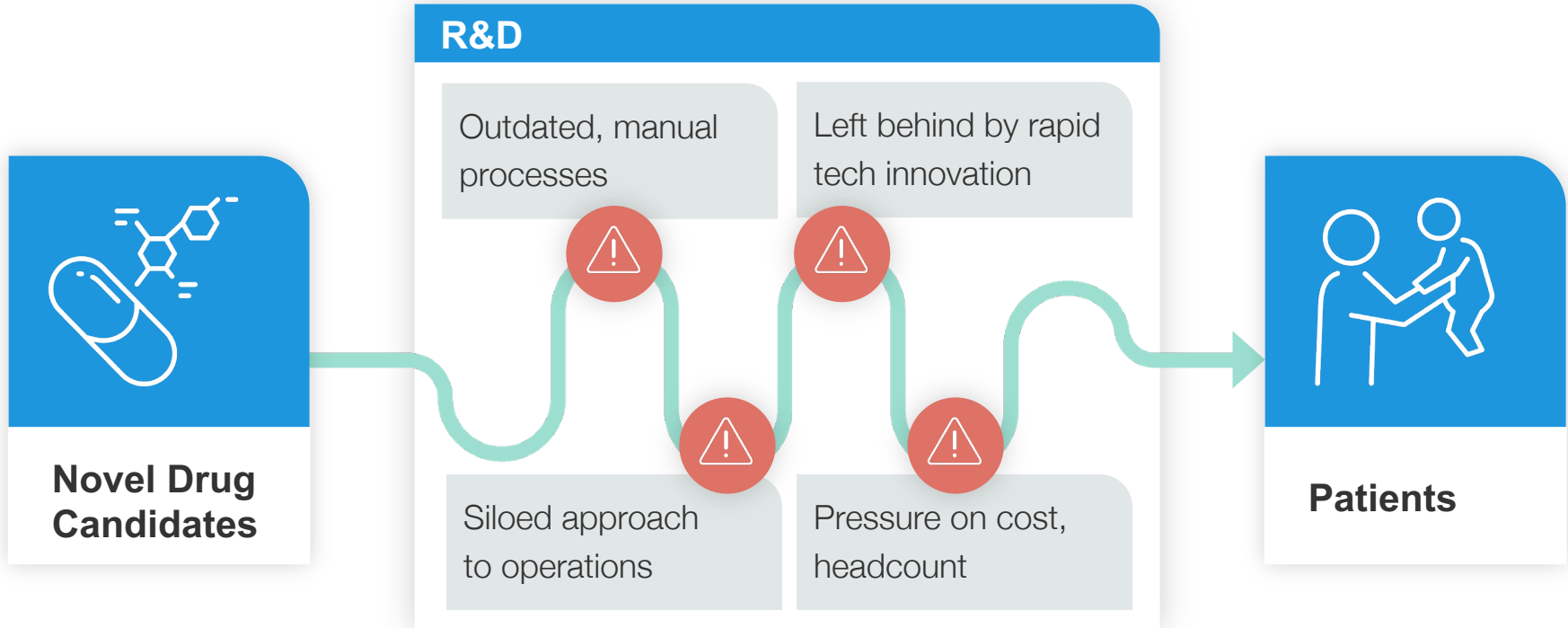


Large language models (LLMs) are text-oriented generative artificial intelligence models that are trained on large volumes of text to interpret textual inputs and generate human-like textual outputs.



Change needed to accelerate innovation

Outdated approaches to R&D preventing treatment for making it to market





How can **AI and GenAI** solve these problems **Today?**



Use AI to identify **common patterns**

Analyzing patterns, **AI can find...**

- Duplicate lab tests
- Missing data
- Medication discrepancies
- Adverse event overlap

AI can then **suggest queries**, based on the data discrepancies it finds





Common patterns example



AI



You

Identifies **potential data discrepancy** and query

Reviews discrepancy

Approves or rejects query



“With 80% confidence, a **query needs to be raised** on ‘medical history: high-blood pressure,’ because it is likely a **duplicate adverse event**”

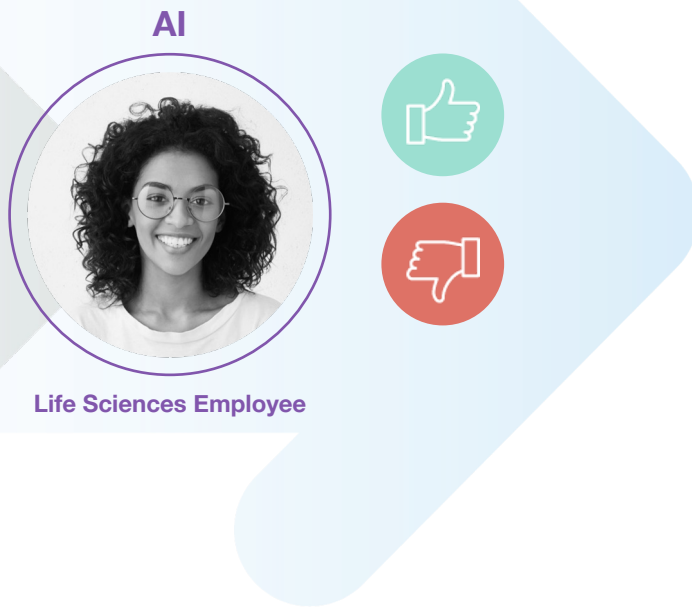




Use GenAI to generate listings and code

Analyzing data, GenAI can generate...

- Data listings
- Tables and graphs
- Code for data quality checks
- Simulated test data
- ...and more



Generate listings example



You



GenAI



“I would like to see **patients with a rash** as an adverse event or taking **cortisone, age greater than 60, and female**”



Generates **editable listings**

The screenshot shows a query builder interface with the following query components:

- aeterm is Rash
- OR
- cmdecod is CORTISONE
- AND
- age greater than 60
- AND
- sex is Female
- AND
- race is White

The resulting table contains the following data:

studyid	siteid	usubjid	age	sex	race	cmdecod	aeterm
Alpha-111	21199	41263	66	Female	White	CORTISONE	Angina pectoris
Alpha-111	21199	41263	66	Female	White	CORTISONE	COVID-19

Buttons at the bottom: Save as Custom Rule, Add/Drop Columns, Export as CSV, Export Code

Generate code example



You



GenAI



“I would like to create a DQ check of any discrepancies where the **start date of the adverse event** is before the **patient’s birthdate**”



Generates **code and test data**

```
Python
The generated code is based on the APIs enabled by Microsoft Azure Open AI service. This does not api

1 def DQ_AEDM(query_text, AE, DM):
2     ae_df = AE.copy()
3     dm_df = DM.copy()
4     payload_records = []
5     # AESTDTC < BRTHDTC
6     if ae_df.shape[0] > 0 and dm_df.shape[0] > 0:
7         ae_df['AESTDTC'] = pd.to_datetime(ae_df['AESTDTC'])
8         dm_df['BRTHDTC'] = pd.to_datetime(dm_df['BRTHDTC'])
9         ae_df = ae_df[ae_df['AESTDTC'] < dm_df['BRTHDTC'].min()]
10        if ae_df.shape[0] > 0:
11            for ind in range(ae_df.shape[0]):
12                record = ae_df.iloc[ind]
13                payload = {
14                    "query_text": query_text,
15                    "form_index": str(record['form_index'].values[0]),
```

Where does this leave us?



Drug development
is only
getting faster



AI and GenAI are
uniquely positioned to
meet this challenge



Be a change
agent for your
organization



**Stop by
booth #24
to see our
AI in action**

Scan to learn more
about Saama

