

Agenda: bit.ly/CSTA4-20-23



Colorado

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4.20.23 | 5:30-7:00pm

This is our team.



Anna Otto

CSTA President
&
Computer Science and
Online Learning
Coordinator,
Adams 12 Five Star
Schools



Christine Liebe

CSTA Vice President
&
Research Assoc. /
Adj. Professor
Colorado School of
Mines



Mark Holthouse

CSTA Treasurer
&
Retired HS CS Teacher

Current HS CS TA
Volunteer



Sonia Spindt

CSTA Secretary
&
Data Science and
Machine Learning
Instructor, Cherry
Creek Innovation
Campus



Regional Chairs

Pikes Peak Region

Shaun Bradford

North(central) Region

Jeff Slade

West Central Region

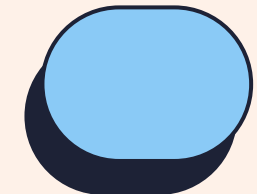
Mande Gabelson

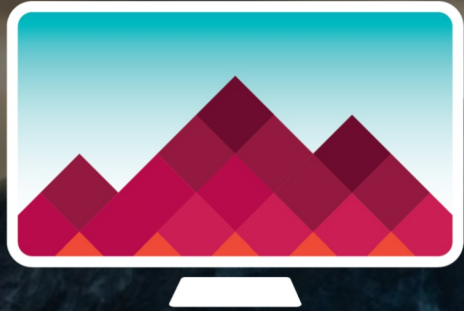
North(west) Region

Ana Poe



Announcements





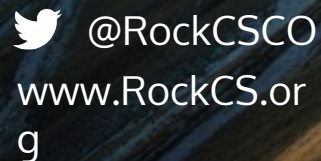
Rock CS

ROCKY MOUNTAIN COMPUTER SCIENCE
CONFERENCE FOR P-12 EDUCATORS

FRIDAY, JUNE 9, 2023

Adams 12 Five Star Schools
Educational Support Center

1500 East 128th Ave, Thornton, CO 80241



Rock CS is Colorado's first dedicated Computer Science (CS) conference for P-12 Educators.

- Beginner to advanced sessions available
- Explore innovative strategies for your CS classroom
- Learn how to integrate CS into core content areas

REGISTER TO ATTEND BY
JUNE 2, 2023

\$50 registration includes a
continental breakfast and lunch



Welcome!

Ivan Portilla

Professor Jeremiah Contreras



ChatGPT Impact on Education

AI Intro

- What is AI?
NLU?

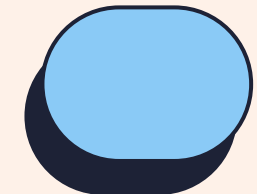
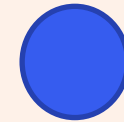
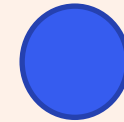
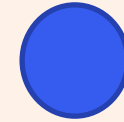
ChatGPT Intro

- What is
ChatGPT?

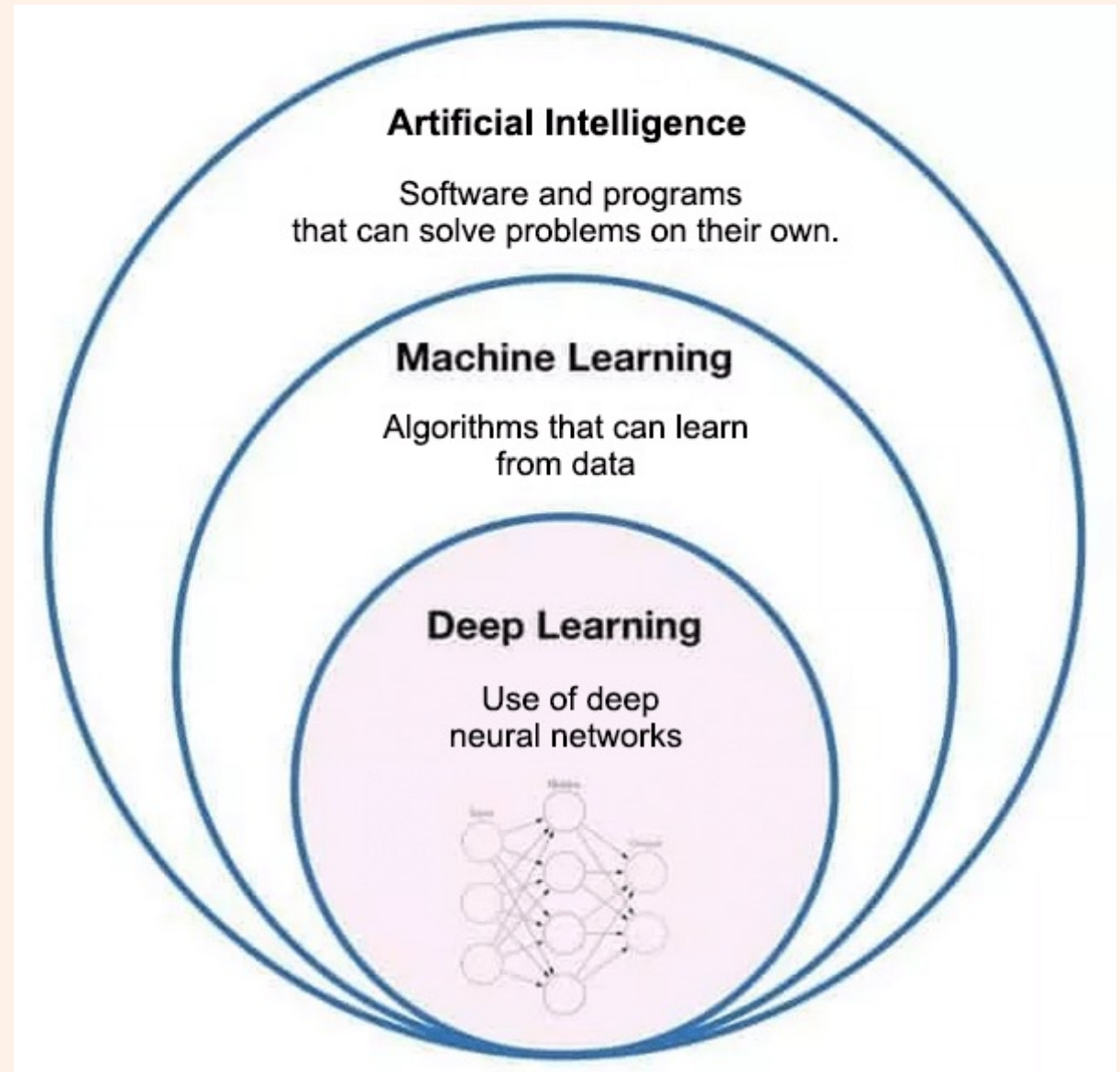
ChatGPT Deep Dive

- Prompt
Engineering

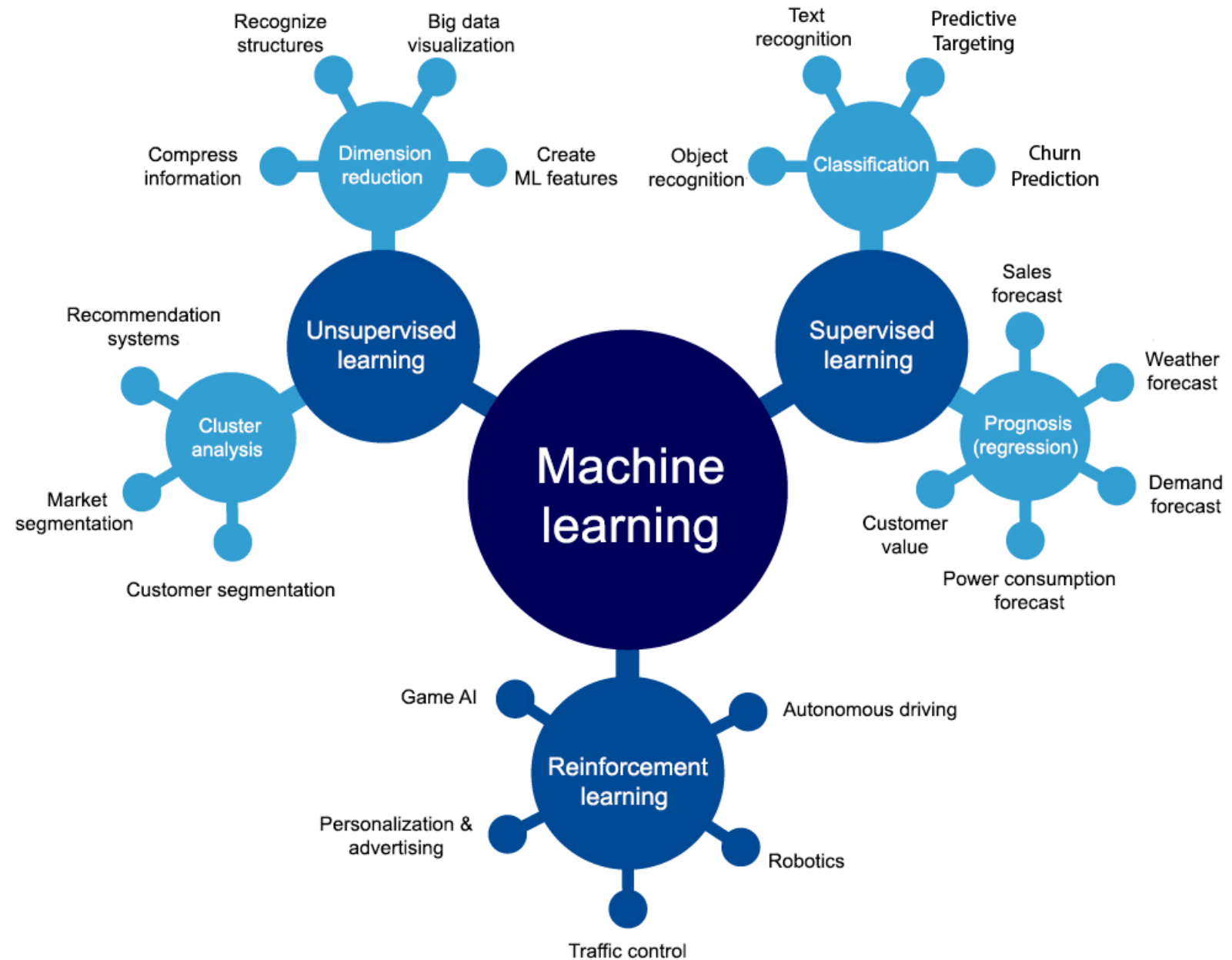
AI Intro



What we know



Machine Learning



Future of AI Example (Semantic Analysis)

The Wining Shot

The soccer game was nearly over. The two teams were tied, one to one.

Alice kicked the ball. Oops! She kicked it the wrong way.

"What a bad kick," Alice thought.

But wait!. Her teammate John jumped to stop the ball. The ball went off John into the goal!.

Alice's team won the game. Hooray! It was not a bad kick, after all.

Who won the game?

Why?

Future of AI Example

The Wining Shot

The soccer game was nearly over. The two teams were tied, one to one.

Alice kicked the ball. Oops! She kicked it the wrong way.

"What a bad kick," Alice thought.

But wait!. Her teammate John jumped to stop the ball. The ball went off John into the goal!.

Alice's team won the game. Hooray! It was not a bad kick, after all.

Who won the game?

Answer: Alice's team

✓ Correct

Explanation: Alice's team won the game because Alice's team had more points than the other team

✓ Correct

ChatGPT

JE

read this: The Wining Shot

The soccer game was nearly over. The two teams were tied, one to one.

Alice kicked the ball. Oops! She kicked it the wrong way.

"What a bad kick," Alice thought.

But wait!. Her teammate John jumped to stop the ball. The ball went off John into the goal!.

Alice's team won the game. Hooray! It was not a bad kick, after all.

ChatGPT

JE

who won the game



Alice's team won the game, even though Alice initially thought she had made a bad kick. John's quick thinking and intervention helped the team to score the winning goal, and they were able to secure victory in the game.

JE

why?

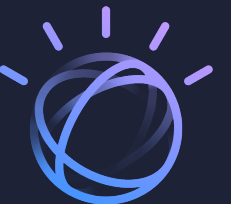


Alice's team won the game because John was able to use his skills and reflexes to intercept the ball, even though Alice's kick was not aimed in the right direction. John's intervention caused the ball to go into the goal, which resulted in a score for Alice's team. Since this happened near the end of the game and there was no time left for the other team to catch up, Alice's team won the game with a score of 2-1.

Closing Thoughts

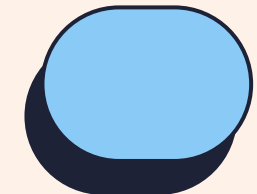
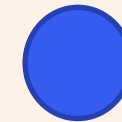
Industry Principles for Trust and Transparency

<https://www.ibm.com/downloads/cas/J45XZOAR>





Intro to ChatGPT



Artificial Intelligence

Machine Learning

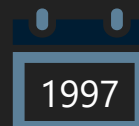
Deep Learning

Generative AI



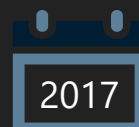
Artificial Intelligence

Intelligence demonstrated by machines



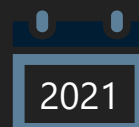
Machine Learning

Learn from data



Deep Learning

Model after the human brain (Neural Networks)



Generative AI

Create new written, visual, and auditory content



*Ensure that artificial
general intelligence (AGI)
benefits humanity.*



*Empower every person and
organization on the planet
to achieve more*

GPT-3

Generate and Understand Text

Codex

Generate and Understand Code

DALL·E

Generate images from text prompts

Generative AI

GPT-3

Prompt:

Write a tagline for an ice cream shop.

Response:

We serve up smiles with every scoop!

Codex

Prompt:

Table customers, columns =
[CustomerId, FirstName,
LastName, Company, Address,
City, State, Country,
PostalCode]

Create a SQL query for all
customers in Texas named Jane
query =

Response:

```
SELECT *  
FROM customers  
WHERE State = 'TX' AND  
FirstName = 'Jane'
```

DALL·E

Prompt: A white Siamese cat

Response:



Azure AI

Applications

 Microsoft 365

 Microsoft Dynamics 365

Partner Solutions



Business Users

Application Platform

AI Builder



Power BI



Power Apps



Power Automate



Power Virtual Agents

Scenario-Based Services

Applied AI Services



Bot Service



Cognitive Search



Form Recognizer



Video Indexer



Metrics Advisor



Immersive Reader

Customizable AI Models

Cognitive Services



Vision



Speech



Language



Decision



OpenAI Service



Developers & Data Scientists

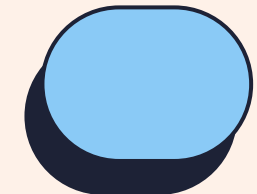
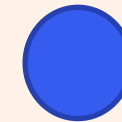
ML Platform



Azure Machine Learning



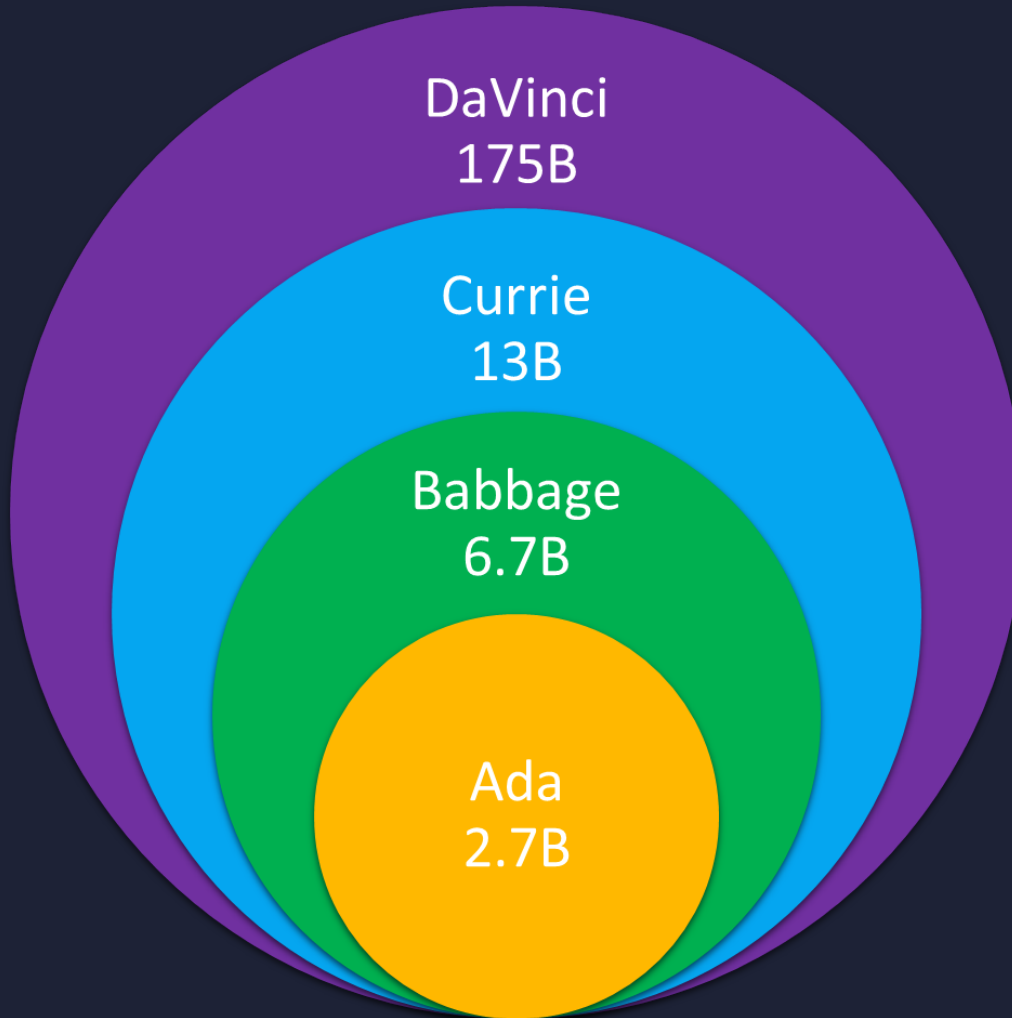
Deep Dive





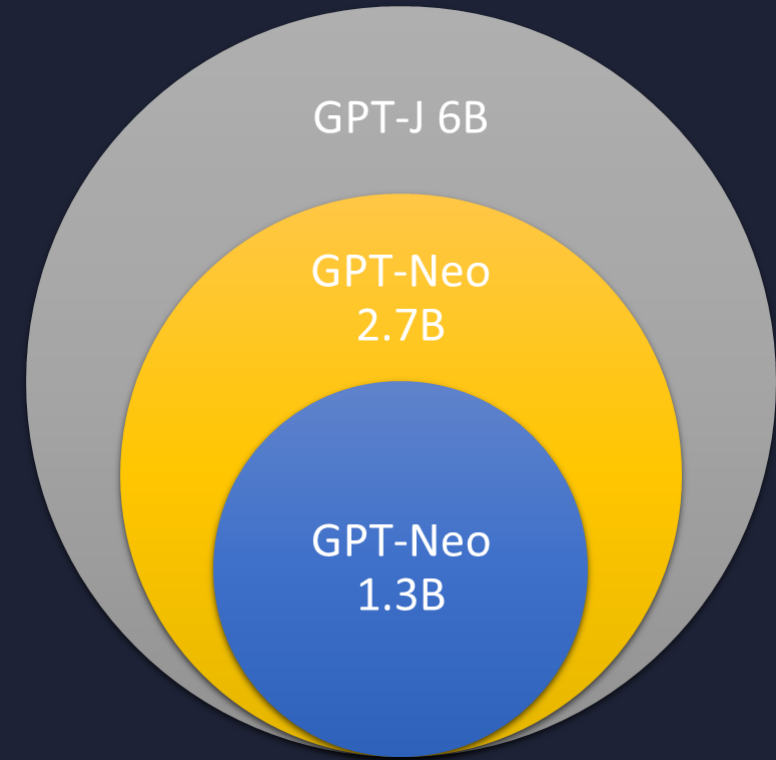
Price & Performance

Azure OpenAI GPT3



Proprietary

EleutherAI



Inferencing Time

Open Source

Text Classification

Named Entity Recognition (Zero-Shot)

Extract the name and mailing address from this email:

Dear Kelly,

It was great to talk to you at the seminar. I thought Jane's talk was quite good.

Thank you for the book. Here's my address 2111 Ash Lane, Crestview CA 92002

Best,

Maya

Name: Maya

Mailing Address: 2111 Ash Lane, Crestview CA 92002

Text Classification

Custom Named Entities (Few-Shot)

Extract job titles from the following sentences.

Sentence: John Doe has been working for Microsoft for 20 years as a Linux Engineer.

Job title: **Linux Engineer**

###

Sentence: John Doe has been working for Microsoft for 20 years and he loved it.

Job title: **none**

###

Sentence: Marc Simoncini | Director | Meetic

Job title: **Director**

###

Sentence: Damien is the CTO of Platform.sh, he was previously the CTO of Commerce Guys, a leading ecommerce provider.

Job title: **CTO**

Text Classification

Multi-Label Text Classification (Few-Shot)

The following is a list of movies and the **categories** they fall into:

Topgun: As students at the United States Navy's elite fighter weapons school compete to be best in the class, one daring young pilot learns a few things from a civilian instructor that are not taught in the classroom.

Category: **Drama, Action**

Hustle: A basketball scout discovers a phenomenal street ball player while in Spain and sees the prospect as his opportunity to get back into the NBA.

Category: **Comedy, Drama, Sport**

The Northman: From visionary director Robert Eggers comes The Northman, an action-filled epic that follows a young Viking prince on his quest to avenge his father's murder.

Category: **Action, Adventure, Drama**

Text Generation

Paraphrasing (Few-Shot)

Article: Searching a specific search tree for a binary key can be programmed recursively or iteratively.

Paraphrase: Searching a specific search tree according to a binary key can be recursively or iteratively programmed.

Article: It was first released as a knapweed biocontrol in the 1980s in Oregon , and it is currently established in the Pacific Northwest.

Paraphrase: It was first released as Knopweed Biocontrol in Oregon in the 1980s , and is currently established in the Pacific Northwest.

Article: 4-OHT binds to ER , the ER / tamoxifen complex recruits other proteins known as co-repressors and then binds to DNA to modulate gene expression.

Paraphrase: The ER / Tamoxifen complex binds other proteins known as co-repressors and then binds to DNA to modulate gene expression

Article: Google was founded in 1998 by Larry Page and Sergey Brin while they were Ph.D. students at Stanford University in California. Together they own about 14 percent of its shares and control 56 percent of the stockholder voting power through supervoting stock. They incorporated Google as a privately held company on September 4, 1998

Paraphrase Google was incorporated as a privately held company on September 4, 1998 by Larry Page and Sergey Brin, while they were Ph.D. students at Stanford University in California. They own about 14 percent of its shares and control 56 percent of the stockholder voting power through supervoting stock.

Reason Over Unstructured Text

Question and Answering

On Monday, Microsoft launched an OpenAI service as part of its Azure cloud platform, offering businesses and start-ups the ability to incorporate models like ChatGPT into their own systems. The company has already been building AI tools into many of its consumer products, such as a DALL-E 2 feature in its Bing search engine that can create images based on a text prompt, and the Information reported recently that it's working to bring more of them to Microsoft Office as well.

What will Microsoft incorporate in it's own systems?

Microsoft plans to incorporate AI tools into its own systems, such as a DALL-E 2 feature in its Bing search engine that can create images based on a text prompt, and the Information reported recently that it's working to bring more of them to Microsoft Office as well

Text Classification

Keyword Extraction (Few-Shot)

Information Retrieval (IR) is the process of obtaining resources relevant to the information need. For instance, a search query on a web search engine can be an information need. The search engine can return web pages that represent relevant resources.

Keywords: searching, missing, desert

###

I believe that using a document about a topic that the readers know quite a bit about helps you understand if the resulting keyphrases are of quality.

Keywords: document, understand, keyphrases

###

Since transformer models have a token limit, you might run into some errors when inputting large documents. In that case, you could consider splitting up your document into paragraphs and mean pooling (taking the average of) the resulting vectors.

Keywords: transformer, models, token

Summarization

Extractive vs Abstractive

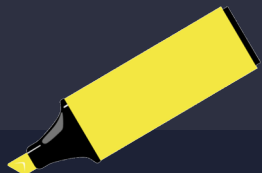
Extractive

Select parts of the original text to form a summary

- Easier
- Restrictive (no paraphrasing)

Peter and Elizabeth took a taxi to attend the night party in the city. While in the party, Elizabeth collapsed and was rushed to the hospital.

Peter and Elizabeth attend party city. Elizabeth rushed hospital



Abstractive (Semantic)

Generates new text using natural language generation techniques

- More difficult
- More flexible (more human)

Peter and Elizabeth took a taxi to attend the night party in the city. While in the party, Elizabeth collapsed and was rushed to the hospital.

Elizabeth was hospitalized after attending a party with Peter.



Abstractive Summarization

Contact Center Summarization

Summarize this for a call center agent:

Agent: Thank you for calling ADM. Who am I am speaking to?

Customer: Hello, my name is Peter Smith. I own a small business and have some questions regarding payroll processing.

Agent: Good morning, Peter, before we get started may I ask you a few questions so that I better answer your questions today?

Customer: Thank you that is quite helpful. Are there specific regulations that I need to follow?

Agent: Certain aspects of payroll processing are regulated by the Internal Revenue Service (IRS) and the Department of Labor (DOL)

The agent is speaking to a customer named Peter Smith. Peter is asking for tips on manual payroll processing. The agent also informs Peter that certain aspects of payroll processing are regulated by the Internal Revenue Service (IRS) and the Department of Labor (DOL).

Prompt Insert

Only DaVinci-002+

Before

These are agenda topics for a customer presentation.

1. Introduction to GPT3

[insert]

10. Conclusion

After

These are agenda topics for a customer presentation.

1. Introduction to GPT3

2. Overview of GPT3 Features

3. Benefits of GPT3

4. GPT3 Use Cases

5. GPT3 Pricing

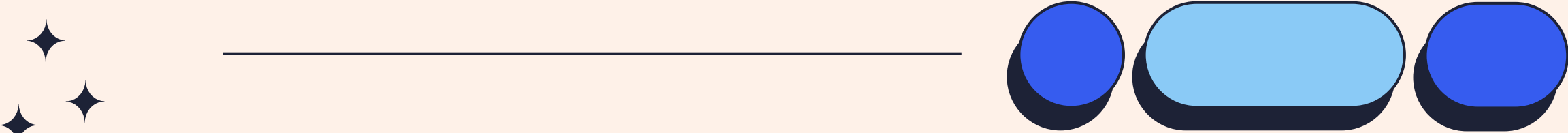
6. GPT3 Security

7. GPT3 Support

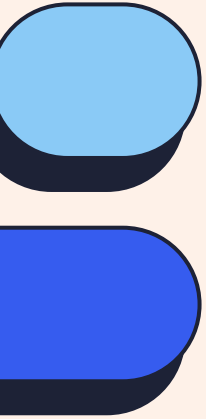
8. GPT3 Integration

9. Q&A Session

10. Conclusion



Collaboration Time!



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