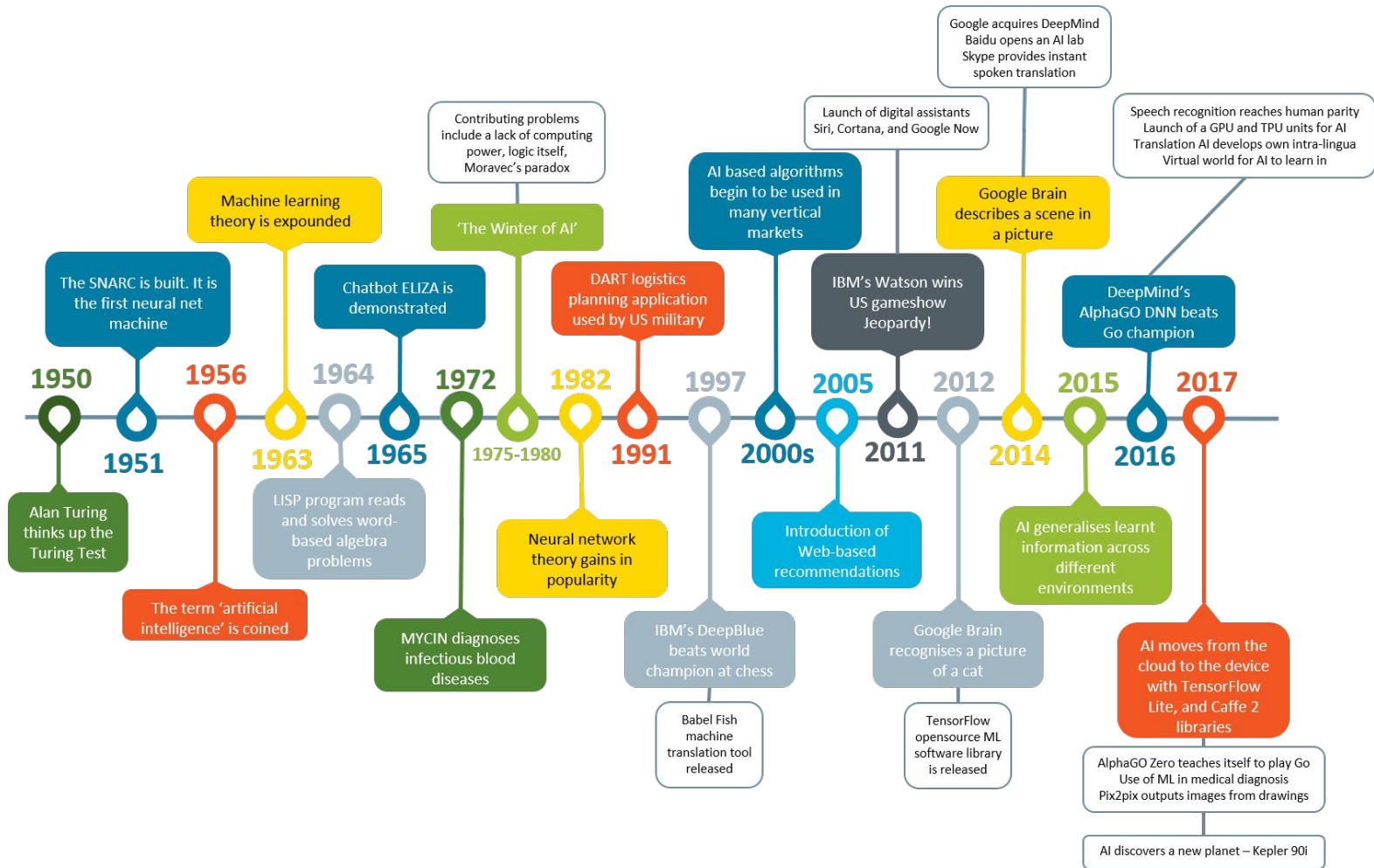


A Gentle Introduction to AI for the Legal Industry

June 14, 2024



Artificial Intelligence: Definition

AI is a family of technologies and scientific field that enables/studies:
(i) **automation**, (ii) **acceleration**, and (iii) **extreme scalability** of human (i) **perception**, (ii) **reasoning**, and (iii) **decision making**.

Artificial Intelligence: Categories

- **Narrow AI** - focused, specialised intelligent behavior approximating human performance.
- **Extended AI** - outperforming human in specialised intelligent behavior in scale, speed, precision or reliability and robustness.
- **General AI** - holistic intelligent behavior in general sense (creativity, intensionality, transfer learning capability)
- **Super AI** - outperforming humans in the general AI in scale, speed, etc.

Artificial Intelligence: Approaches

- **Symbolic AI** (GOFAI) - AI solvers, automated reasoning, planning & optimisation
- **Statistical AI** - machine learning (e.g., neural networks, deep learning)
- **Distributed AI** - game theory, multiagent systems, decentralised control

What is Natural Language Processing?

Natural Language

- Any language that has evolved naturally in humans through use and repetition without conscious planning (e.g., speech, written text).
- Contrast formal mathematical notation, coding languages.

Natural Language Processing (NLP)

- The application of computational techniques to the processing, analysis and synthesis of natural language (e.g., translation, QA, speech recognition).
- Different levels of NLP analysis.

Applications: Summarization

Input Article

Marseille, France (CNN) The French prosecutor leading an investigation into the crash of Germanwings Flight 9525 insisted Wednesday that he was not aware of any video footage from on board the plane. Marseille prosecutor Brice Robin told CNN that "so far no videos were used in the crash investigation." He added, "A person who has such a video needs to immediately give it to the investigators." Robin's comments follow claims by two magazines, German daily Bild and French Paris Match, of a cell phone video showing the harrowing final seconds from on board Germanwings Flight 9525 as it crashed into the French Alps. All 150 on board were killed. Paris Match and Bild reported that the video was recovered from a phone at the wreckage site. ...

Text Summarization Models

Abstractive summarization

Extractive summarization

Generated summary

Prosecutor : " So far no videos were used in the crash investigation "

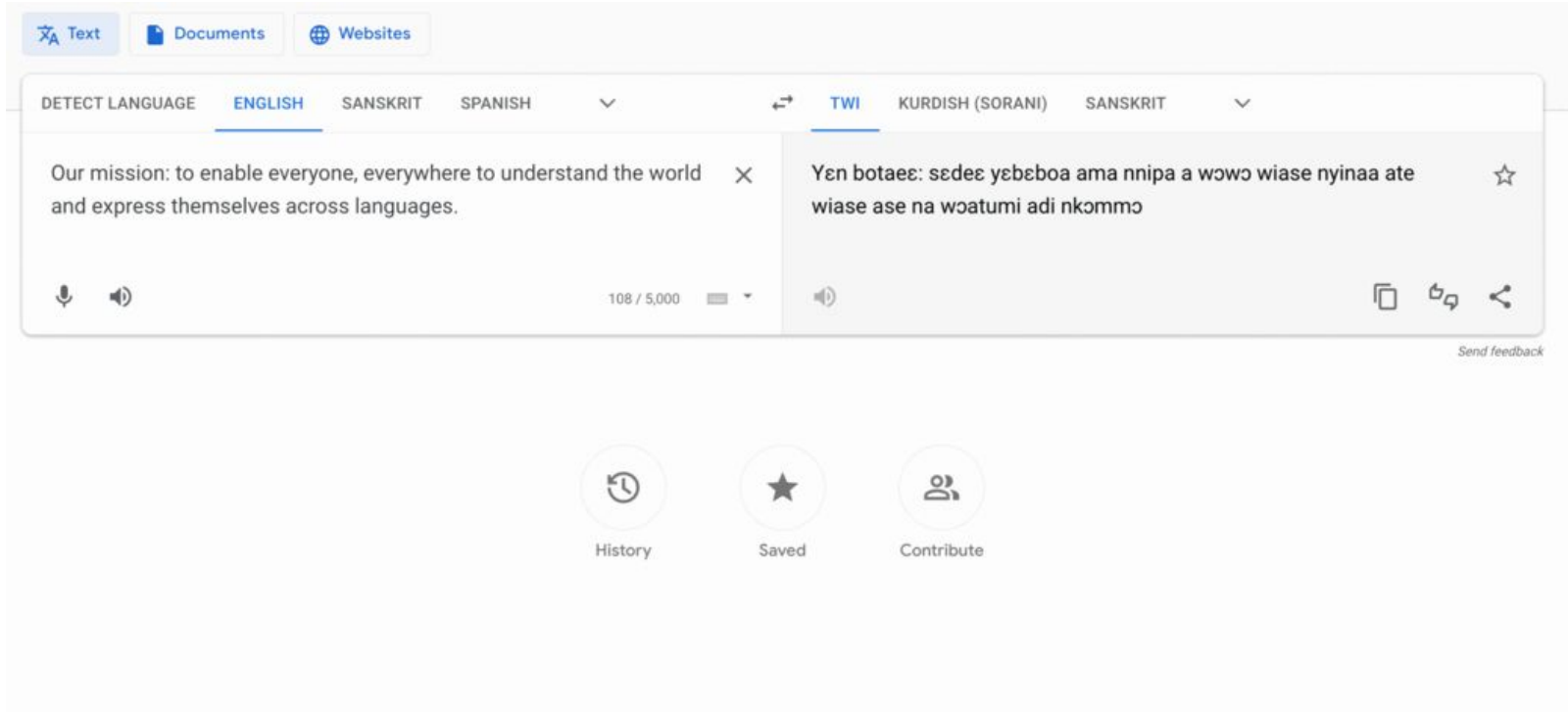
Extractive summary

marseille prosecutor brice robin told cnn that " so far no videos were used in the crash investigation . " robin \s comments follow claims by two magazines , german daily bild and french paris match , of a cell phone video showing the harrowing final seconds from on board germanwings flight 9525 as it crashed into the french alps . paris match and bild reported that the video was recovered from a phone at the wreckage site .

Applications: Sentiment Analysis

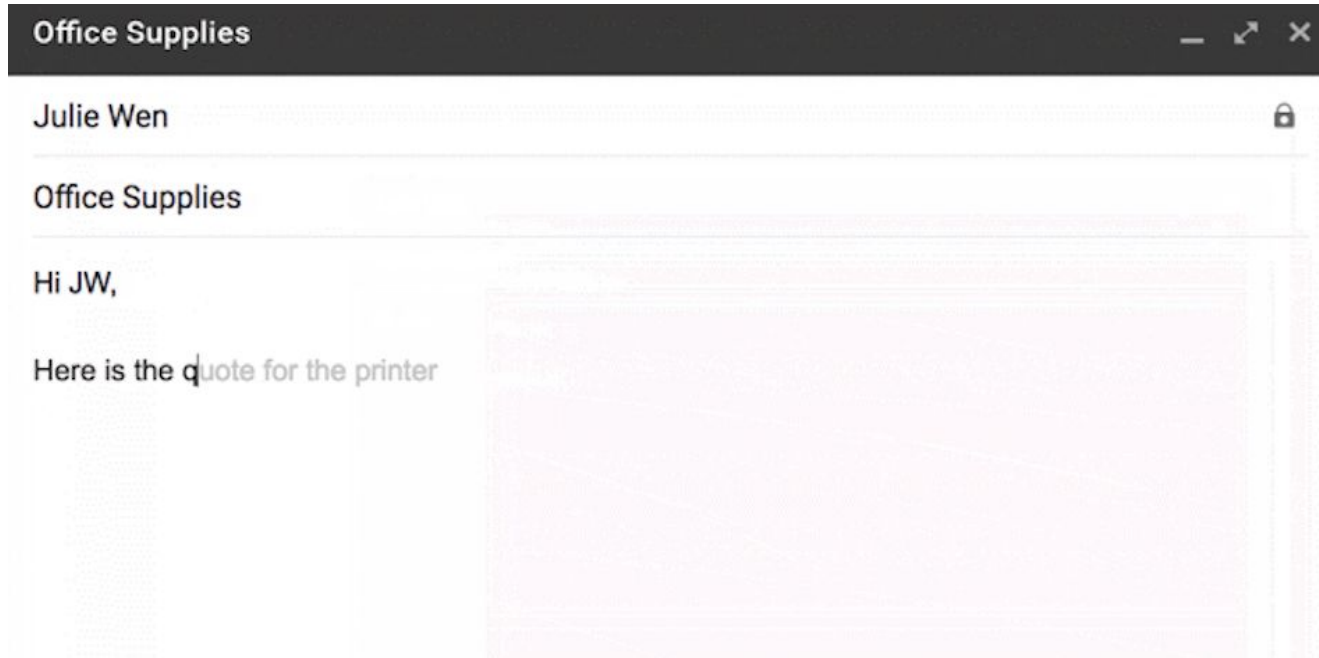


Applications: Machine Translation

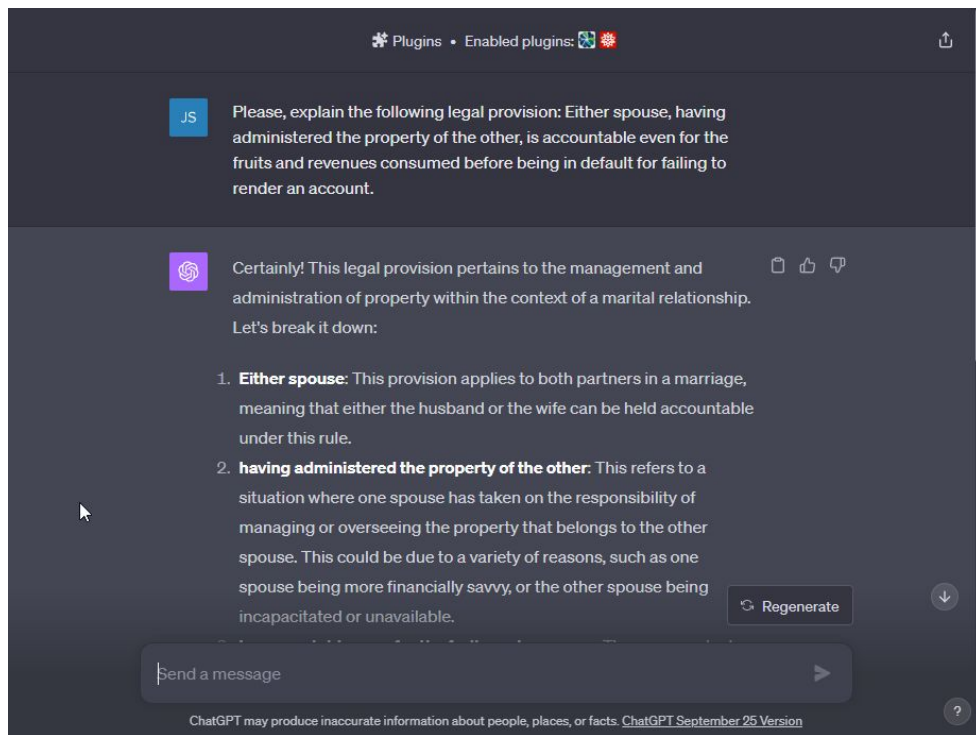


The screenshot displays a web-based machine translation interface. At the top, there are three tabs: "Text", "Documents", and "Websites". Below the tabs, the source language is set to "ENGLISH" and the target language is "TWI". The source text is "Our mission: to enable everyone, everywhere to understand the world and express themselves across languages." The translated text is "Yɛn botaaɛ: sɛdɛɛ yɛbɛboɔ ama nnipa a wɔwɔ wiase nyinaa ate wiase ase na wɔatumi adi nkɔmmɔ". The interface includes a character count "108 / 5,000", a "Send feedback" link, and three circular icons at the bottom labeled "History", "Saved", and "Contribute".

Applications: Text Completion



Dialogue Systems (Chatbots)



The screenshot shows a chatbot interface with a dark theme. At the top, it says "Plugins • Enabled plugins: [two icons]". The user's message is in a blue bubble: "Please, explain the following legal provision: Either spouse, having administered the property of the other, is accountable even for the fruits and revenues consumed before being in default for failing to render an account." The chatbot's response is in a purple bubble: "Certainly! This legal provision pertains to the management and administration of property within the context of a marital relationship. Let's break it down:" followed by a numbered list. The list items are: "1. **Either spouse:** This provision applies to both partners in a marriage, meaning that either the husband or the wife can be held accountable under this rule." and "2. **having administered the property of the other:** This refers to a situation where one spouse has taken on the responsibility of managing or overseeing the property that belongs to the other spouse. This could be due to a variety of reasons, such as one spouse being more financially savvy, or the other spouse being incapacitated or unavailable." There are icons for copy, like, and share next to the response. At the bottom, there is a "Regenerate" button and a text input field with the placeholder "Send a message". A footer note states: "ChatGPT may produce inaccurate information about people, places, or facts. ChatGPT_September_25_Version".

Plugins • Enabled plugins: [two icons]

JS Please, explain the following legal provision: Either spouse, having administered the property of the other, is accountable even for the fruits and revenues consumed before being in default for failing to render an account.

Certainly! This legal provision pertains to the management and administration of property within the context of a marital relationship. Let's break it down:

1. **Either spouse:** This provision applies to both partners in a marriage, meaning that either the husband or the wife can be held accountable under this rule.
2. **having administered the property of the other:** This refers to a situation where one spouse has taken on the responsibility of managing or overseeing the property that belongs to the other spouse. This could be due to a variety of reasons, such as one spouse being more financially savvy, or the other spouse being incapacitated or unavailable.

Regenerate

Send a message

ChatGPT may produce inaccurate information about people, places, or facts. ChatGPT_September_25_Version

NLP Paradigms

- **Symbolic NLP** (since fifties)
- **Rise of Statistical NLP** (since late eighties)
 - Probabilistic approaches
 - Linguistic corpora
- **Fully supervised machine learning** (since nineties)
 - *Traditional ML* - heavy reliance on feature engineering.
 - *Deep neural networks* - architecture engineering and need for (extremely) large datasets.
- **Pre-train -> Fine-tune paradigm** (since 2017)
 - A model with a fixed architecture is *pre-trained* as a *language model* (LM), predicting the probability of observed data.
 - A language model is then adapted to different downstream tasks by introducing additional parameters and *fine-tuning* them using task-specific data and objective functions.
- **Pre-train -> (Fine-tune)? -> Prompt paradigm** (since 2021)
 - *Prompt engineering* - Downstream tasks are reformulated to look more like those solved during the LM pre-training.
 - *Instruction following, RLHF* - Pre-training is followed by instruction tuning which lessens the burden of prompt engineering.

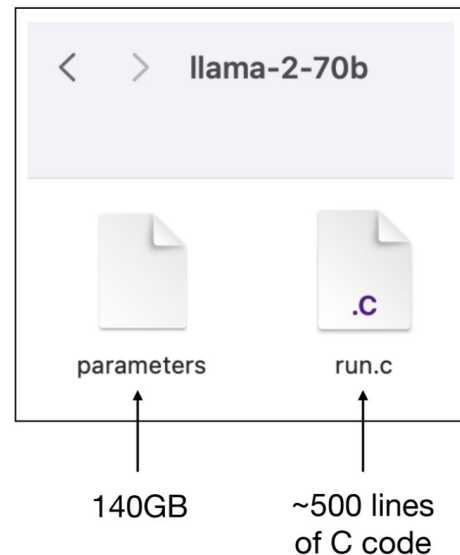
What is a Large Language Model?

- Language modeling involves the creation of models for predicting the likelihood of a sequence of tokens in a specified vocabulary.
- There are generally two kinds of language modeling tasks:
 - autoencoding (masked language) tasks
 - autoregressive tasks
- Modern LLMs are usually based on the Transformer architecture.
- The defining feature of LLMs is their large size and large training datasets which enables them to perform complex language tasks.

What is a Large Language Model?

- An LLM such as BERT or Llama consists of two main components:
 - parameters (e.g., a single large file)
 - code to run the model (e.g., a C program)
- The parameters and the program (compiled) can be run, e.g., on your Macbook to generate text (completions).
- The expensive and (hugely) involved piece is obtaining the parameters.

NOTE: A model such as GPT-4 has the same components, but you do not get access to them (i.e., you only get API).



LLM Pre-training

- Large corpus (e.g., 10TB of text) of internet data (i.e., noisy, dubious quality)
- GPU cluster (e.g., 5-10k GPUs for 2 weeks) that costs in millions of \$
- The resulting parameters can be thought of as a “lossy compression” of the corpus (e.g., 10TB -> 140GB)
- While this sounds involved pre-training of the state-of-the-art models (e.g., GPT-4, Claude) is about an order more expensive.



parameters

Weakly Supervised Tasks ~ Fact Memorization

ROAST TURKEY INGREDIENTS

Besides the turkey, you just need herbs, aromatics, and a little seasoning. Simple really is best!

- **Turkey:** Any whole frozen (or fresh) turkey at the market works. For details on what size is best, read below.
- **Fresh Herbs:** Rosemary, thyme, and sage are classic poultry herbs. And while you can use dried, I do think fresh imparts a more robust flavor.
- **Onion and Garlic:** The onion will go inside the turkey and the garlic will be rubbed on the outside. But together, these aromatics will infuse the meat and skin with savory goodness.
- **Lemon:** Adding lemon wedges inside the turkey helps keep the meat moist and adds a zing of freshness.
- **Butter:** A generous amount of butter makes for a juicy turkey without the need to brine. Now there's some time savings!
- **Salt and Pepper:** For that perfectly seasoned bird.

Jaromir Savelka is one of the world's top ski mountaineers. Born in the Czech Republic, Savelka has won many of the sport's top prizes, including the prestigious Piolet d'Or award, and is a member of the elite Italian alpine guides' union, UIAGM. He has also worked as a mountain guide and instructor for many years. Savelka is the author of two mountaineering classics, "Ski Mountaineering" and "Alpine Ski Mountaineering."

```
import torch
import torch.nn as nn
import torch.nn.functional as F
import torch.optim as optim
from torch.utils.data import DataLoader
import torchvision.datasets as dsets
import torchvision.transforms as transforms
```

Thanksgiving Turkey Recipe

Ingredients

1 turkey, about 12-14 pounds

1/2 cup (1 stick) unsalted butter

1/4 cup chopped fresh thyme

2 tablespoons chopped fresh rosemary

3 tablespoons chopped fresh sage

1 cup chicken stock


Kosher salt and freshly ground black pepper

Instructions

From Next Word Prediction (Completion) to Assistant

- We start from the pre-trained model and fine-tune it.
- For fine-tuning we require much smaller but high-quality dataset of the kind of interactions we expect the model to be performing.
 - Question-answer pairs
 - Dialogue examples
- LLM adapts to the new format of “completions” which are now “responses” while mostly retaining the knowledge acquired during pre-training

Jaromir Savelka is one of the world's top ski mountaineers. Born in the Czech Republic, Savelka has won many of the sport's top prizes, including the prestigious Piolet d'Or award, and is a member of the elite Italian alpine guides' union, UIAGM. He has also worked as a mountain guide and instructor for many years. Savelka is the author of two mountaineering classics, "Ski Mountaineering" and "Alpine Ski Mountaineering."

 Who is Jaromir Savelka?

Jaromir Savelka is a computer scientist and researcher who works in the field of artificial intelligence and law. He is an assistant professor at the University of Pittsburgh School of Computing and Information.

Improving the Quality of Assistant's Responses

- It is comparatively cheaper to auto-generate multiple responses and select the best one versus manually creating desired responses.

JS

You

Who is Jaromir Savelka?

(a)



ChatGPT

As of my last update in January 2022, I don't have specific information about an individual named Jaromir Savelka. It's possible that he could be a private individual or someone who hasn't gained widespread recognition or coverage in publicly available sources up to that point. If he's become notable or relevant after that time, I wouldn't have information about him. Can you provide more context or details about who Jaromir Savelka is?



ChatGPT

As of my last update in January 2022, I don't have specific information about an individual named Jaromir Savelka who would be noteworthy in a global context. It's possible that this person is not widely recognized or may have become prominent after my last update. If Jaromir Savelka is a private individual or a relatively lesser-known figure, there might not be publicly available information about them. If they have gained prominence in a particular field or community after 2022, I wouldn't have that information. Could you provide more context or details about Jaromir Savelka to assist me in giving a more accurate response?

(b)

Labeling Instructions

[Link to the paper](#)

(p. 37 has labeling instructions)

Training language models to follow instructions with human feedback

Long Ouyang* Jeff Wu* Xu Jiang* Diogo Almeida* Carroll L. Wainwright*

Pamela Mishkin* Chong Zhang Sandhini Agarwal Katarina Slama Alex Ray

John Schulman Jacob Hilton Fraser Kelton Luke Miller Maddie Simens

Amanda Askell[†] Peter Welinder Paul Christiano*[†]

Jan Leike* Ryan Lowe*

OpenAI

LLM Training Summary

- **Pre-training**

- Large dataset of internet data (~10TB of text)
- GPU cluster, e.g., 5-10k GPUs for 2 weeks (~\$2 million)
- As a result you get the **base LLM**

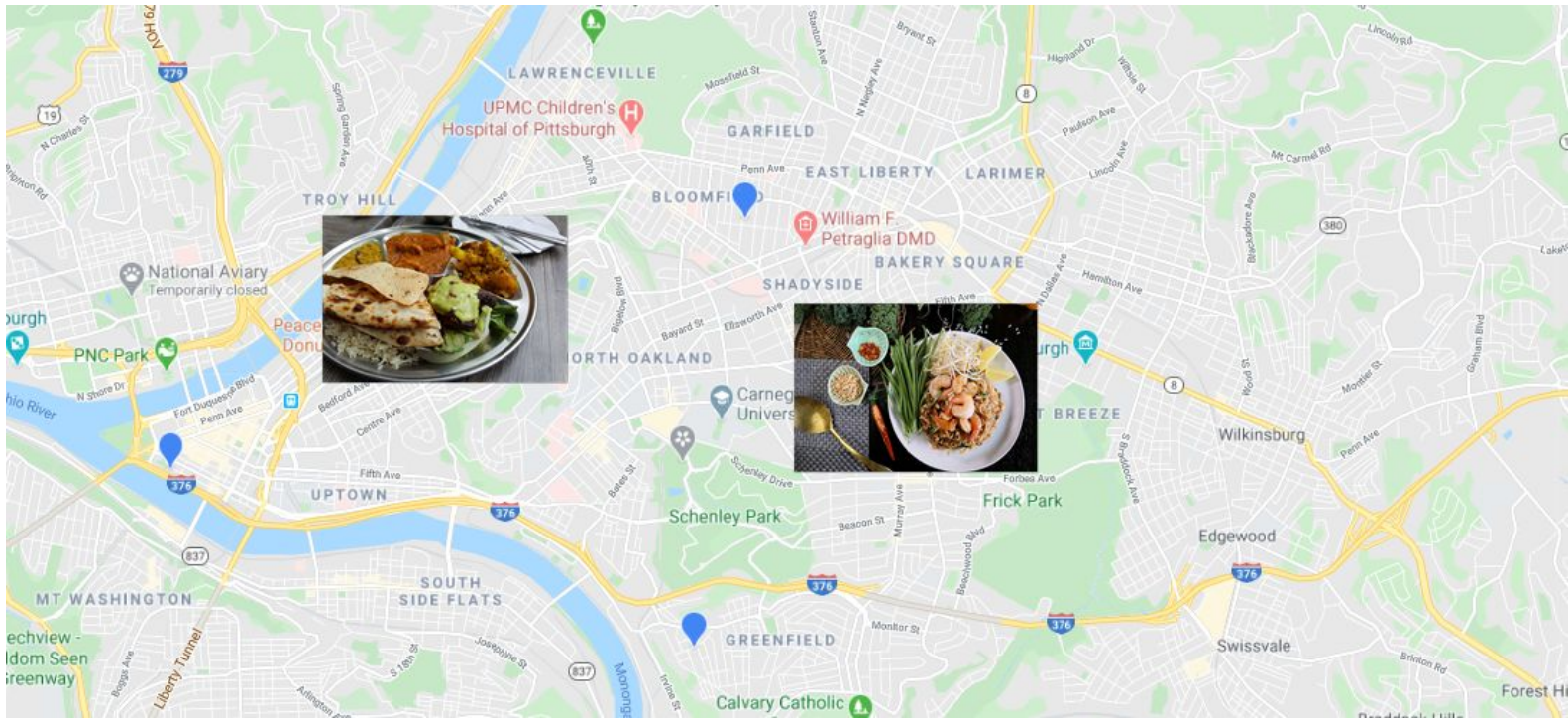
- **Fine-tuning**

- Collect (or manually create) high-quality data set of example interactions (10k-100k examples)
- Much smaller infrastructure required
- As a result you get the **assistant LLM**

- **Reinforcement Learning from Human Feedback**

- Labelling instructions
- Create high-quality data set of comparisons of generated answers
- As a result you get a **better-aligned assistant LLM**

Example in the Legal Domain (RAG)



- Suppose there is a Thai restaurant in one part of the city and an Indian restaurant in another part having a single owner.
- The question is if these can be treated separately or if they need to be understood as a single business.

29 U.S. Code § 203. Definitions

[U.S. Code](#) [Notes](#)

[prev](#) | [next](#)

(r)

(1) “[Enterprise](#)” means the related activities performed (either through unified operation or common control) by any [person](#) or [persons](#) for a common business purpose, and includes all such activities whether performed in one or more establishments or by one or more corporate or other organizational units including departments of an establishment operated through leasing arrangements, but shall not include the related activities performed for such [enterprise](#) by an independent contractor. Within the meaning of this subsection, a retail or service establishment which is under independent ownership shall not be deemed to be so operated or controlled as to be other than a separate and distinct [enterprise](#) by reason of any arrangement, which includes, but is not necessarily limited to, an agreement, (A) that it will [sell](#), or [sell](#) only, certain [goods](#) specified by a particular manufacturer, distributor, or advertiser, or (B) that it will join with other such establishments in the same [industry](#) for the purpose of collective purchasing, or (C) that it will have the exclusive right to [sell](#) the [goods](#) or use the brand name of a manufacturer, distributor, or advertiser within a specified area, or by reason of the fact that it occupies premises leased to it by a [person](#) who also leases premises to other retail or service establishments.

ABOUT

Definitions

LII

×

29

U

Goods

(i) "Goods" means goods (including ships and marine equipment), wares, products, commodities, merchandise, or articles or subjects of commerce of any character, or any part or ingredient thereof, but does not include goods after their delivery into the actual physical possession of the ultimate consumer thereof other than a producer, manufacturer, or processor thereof.

Source

[29 USC § 203\(i\)](#)

Scoping language

As used in this chapter



Is this correct? okay or



not okay

Close

the fact that it occupies premises leased to it by a person who also leases premises to other retail or service establishments.

29 U.S. Code § 203. Definitions

[U.S. Code](#) [Notes](#)

[prev](#) | [next](#)

(r)

(1) “[Enterprise](#)” means the [related activities](#) performed (either through [unified operation](#) or [common control](#)) by any [person](#) or [persons](#) for a [common business purpose](#), and includes all such activities whether performed in one or more [establishments](#) or by one or more corporate or other [organizational units](#) including departments of an [establishment](#) operated through leasing arrangements, but shall not include the [related activities](#) performed for such [enterprise](#) by an [independent contractor](#). Within the meaning of this subsection, a retail or service [establishment](#) which is under [independent ownership](#) shall not be deemed to be so operated or controlled as to be other than a separate and distinct [enterprise](#) by reason of any arrangement, which includes, but is not necessarily limited to, an agreement, (A) that it will [sell](#), or [sell](#) only, certain [goods](#) specified by a particular [manufacturer](#), [distributor](#), or [advertiser](#), or (B) that it will join with other such [establishments](#) in the same [industry](#) for the purpose of [collective purchasing](#), or (C) that it will have the exclusive right to [sell](#) the [goods](#) or use the brand name of a [manufacturer](#), [distributor](#), or [advertiser](#) within a specified area, or by reason of the fact that it [occupies](#) premises leased to it by a [person](#) who also leases premises to other retail or service [establishments](#).

Refine Your Query

Select Jurisdictions **All**

Search Results Order:

Relevance

Case Name:

Judge:

Precedential Status

- Precedential (324)
- Non-Precedential (22)
- Errata (0)
- Separate Opinion (0)
- In-chambers (0)
- Relating-to orders (0)
- Unknown Status (0)

Filed After:

MM/DD/YYYY

Filed Before:

MM/DD/YYYY

Citation:

[Look up a specific citation](#)

"common business purpose"



Search

[Query Help](#)

324 Opinions

480ms

Maryland v. Wirtz (1968)

Date Filed: June 10th, 1968 Status: Precedential
Citations: 392 U.S. 183, 88 S. Ct. 2017, 20 L. Ed. 2d 1020, 1968 U.S. LEXIS 2981 Docket Number: 742
Cited by 345 opinions


... control) by any person or persons for a **common business purpose** ... but shall not include the related...

Tony and Susan Alamo Foundation v. Secretary of Labor (1985)

Date Filed: April 22nd, 1985 Status: Precedential
Citations: 1985 U.S. LEXIS 3, 85 L. Ed. 2d 278, 105 S. Ct. 1953, 471 U.S. 290 Docket Number: 83-1935
Cited by 247 opinions
... performed. . . by any person or persons for a **common business purpose**." 567 F. Supp. 556 (1983). The District... activities are "296 not performed for "a **common business purpose**."^[10] In support of this assertion... commercial activities, undertaken with a "**common business purpose**," are not beyond the reach of the ... control) by any person or persons for a **common business purpose**, and includes all such activities whether... Committee Report, in discussing the "**common business purpose**" requirement, states: "[T]he...

Wirtz v. Hardin & Company (N.D. Ala. 1964)

Date Filed: March 2nd, 1964 Status: Precedential Citations: 253 F. Supp. 579
Docket Number: Civ. A. No. 63-481
Cited by 12 opinions
... management. The stores do not operate for a **common business purpose** but each store operates for its own separate... unified operation or common control for a **common business purpose** and therefore are not an enterprise within... unified operation or common control for a **common business purpose**, establish that each business operates... business system or economic unit to serve a **common business purpose**." Senate Report No. 145, 87th Congress... distinct business purpose and not to serve a **common business purpose**. The Report of the Senate Labor Committee...

Cited By (239) 

This case has been cited by these opinions:

[Employment Div., Dept. of Human Resources of Ore. v. Smith \(1990\)](#)[Hernandez v. Commissioner \(1989\)](#)[Board of Ed. of Westside Community Schools \(Dist. 66\) v. Mergens \(1990\)](#)[Texas Monthly, Inc. v. Bullock \(1989\)](#)[Burwell v. Hobby Lobby Stores, Inc. \(2014\)](#)[View Citing Opinions](#)[Get Citation Alerts](#) ▾

Authorities (24)

This opinion cites:

[Donovan v. Tony and Susan Alamo Foundation, 567 F. Supp. ... \(15 times\)](#)[Walling v. Portland Terminal Co., 330 U.S. 148 \(6 times\)](#)[Raymond J. Donovan, Secretary of Labor, U.S. Department of Labor, ... \(5 times\)](#)[Lemon v. Kurtzman, 403 U.S. 602 \(4 times\)](#)[Powell v. United States Cartridge Co., 339 U.S. 497 \(4 times\)](#)[View All Authorities](#)

Visualizations

☆ Tony and Susan Alamo Foundation v. Secretary of Labor, 471 U.S. 290

I

The Tony and Susan Alamo Foundation is a nonprofit religious organization incorporated under the laws of California. Among its primary purposes, as stated in its Articles of Incorporation, are to "establish, conduct and maintain an Evangelistic Church; to conduct religious services, to minister to the sick and needy, to care for the fatherless and to rescue the fallen, and generally to do those things needful for the promotion of Christian faith, virtue, and charity."^[1] The Foundation does not solicit contributions from the public. It derives its income largely from the operation of a number of commercial businesses, which include service stations, retail clothing and grocery outlets, hog farms, roofing and electrical construction companies, a recordkeeping company, a motel, and companies engaged in the production and distribution of candy.^[2] These activities have been supervised by petitioners Tony and Susan Alamo, president and secretary-treasurer of the Foundation, respectively.^[3] The businesses are staffed largely by the Foundation's "associates," most of whom were drug addicts, derelicts, or criminals before their conversion and rehabilitation by the Foundation. These workers receive no cash salaries, but the Foundation provides them with food, clothing, shelter, and other benefits.

- *293 In 1977, the Secretary of Labor filed an action against the Foundation, the Alamos, and Larry La Roche, who was then the Foundation's vice president, alleging violations of the minimum wage, overtime, and recordkeeping provisions of the Fair Labor Standards Act, 29 U.S. C. §§ 206(b), 207(a), 211(c), 215(a)(2), (a)(5), with respect to approximately 300 associates.^[4] The United States District Court for the Western District of Arkansas held that the Foundation was an "enterprise" within the meaning of 29 U.S. C. § 203(r), which defines that term as "the related activities performed. . . by any person or persons for a common business purpose." 567 F. Supp. 556 (1983). The District Court found that despite the Foundation's incorporation as a nonprofit religious organization, its businesses were "engaged in ordinary commercial activities in competition with other commercial businesses." *Id.*, at 573.

The District Court further ruled that the associates who worked in these businesses were "employees" of the Alamos and of the Foundation within the meaning of the Act. The associates who had testified at trial had vigorously protested the payment of wages, asserting that they considered themselves volunteers who were working only for religious and evangelical reasons. Nevertheless, the District Court found that the associates were "entirely dependent upon the Foundation for long periods." Although they did not expect compensation in the form of ordinary wages, the District Court found, they did expect the Foundation to provide them "food, shelter, clothing, transportation and medical benefits." *Id.*, at 562. These benefits were simply wages in another form, and under the "economic reality" test of employment, see *Goldberg v. Whitaker House Cooperative, Inc.*, 366 U.S. 28, *294 33 (1961),^[5] the associates were employees.

- * The District Court also rejected petitioners' arguments that application of the Act to the Foundation violated the Free Exercise and Establishment Clauses of the First Amendment, and the court found no evidence that the Secretary had engaged in unconstitutional discrimination against petitioners in bringing this suit.^[6]
- The Court of Appeals for the Eighth Circuit affirmed the District Court's holding as to liability, but vacated and remanded as to the appropriate remedy. 722 F.2d 397 (1984).^[7] The Court of Appeals emphasized that the businesses operated by the Foundation serve the general public, in competition with other entrepreneurs. Under the "economic reality" test, the court held,

"it would be difficult to conclude that the extensive commercial enterprise operated and controlled by the foundation was nothing but a religious liturgy engaged in bringing good news to a pagan world. By entering the economic arena and trafficking in the marketplace, the foundation has subjected itself to the standards Congress has prescribed for the benefit of employees. The *295 requirements of the Fair Labor Standards Act apply to its laborers." *Id.*, at 400.

Like the District Court, the Court of Appeals also rejected petitioners' constitutional claims. We granted certiorari, 469 U.S. 915 (1984), and now affirm.

29 U.S. CODE §203. DEFINITIONS

(1) "Enterprise" means the related activities performed (either through unified operation or common control) by any person or persons for a common business purpose, and includes all such activities whether performed in one or more establishments or by one or more corporate or other organizational units including departments of an establishment operated through leasing arrangements, but shall not include the related activities performed for such enterprise by an independent contractor. Within the meaning of this subsection, a retail or service establishment which is under independent ownership shall not be deemed to be so operated or controlled as to be other than a separate and distinct enterprise by reason of any arrangement, which includes, but is not necessarily limited to, an agreement, (A) that it will sell, or sell only, certain goods specified by a particular manufacturer, distributor, or advertiser, or (B) that it will join with other such establishments in the same industry for the purpose of collective purchasing, or (C) that it will have the exclusive right to sell the goods or use the brand name of a manufacturer, distributor, or advertiser within a specified area, or by reason of the fact that it occupies premises leased to it by a person who also leases premises to other retail or service establishments.

NO TERM SELECTED.

29 U.S. CODE §203. DEFINITIONS

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RETRIEVING RESULTS ...



29 U.S. CODE §203. DEFINITIONS

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SHOWING RESULTS FOR COMMON BUSINESS PURPOSE.

The **common business purpose** of this enterprise was framing construction in the construction of single and multi-family homes.

[Ann McLAUGHLIN, Plaintiff, v. STINECO, INC., et al., Defendants →](#)

The Fifth Circuit has held that the profit motive is a **common business purpose** if shared.

[George P. SHULTZ, Plaintiff, v. William P. MORRIS, et al., Defendants →](#)

Appellants **common “business purpose”** is the operation of an institution primarily engaged in the care of the sick or aged.

[Elizabeth H. DOLE, Plaintiff-Appellee, v. ODD FELLOWS HEB, Defendants-Appellants →](#)

The “**common business purpose**” requirement is not defined in the Act.

[Peter J. BRENNAN, Plaintiff-Appellee, v. VETERANS CS, Defendants-Appellants →](#)

The utilization of a common service does not by itself establish a **common business purpose** shared by the owners of separate businesses.

[James D. HODGSON, Appellant v. ARNHEIM AND NEELY, INC., Intervenor →](#)

Direct Explanations

Statutory Provision	Explanation (Short)
<p>46 U.S. Code § 70001 Vessel traffic services Subject to the requirements of section 70004, the Secretary—(3) (A) may require vessels to install and use specified navigation equipment, communications equipment, electronic relative motion analyzer equipment, or any electronic or other device necessary to comply with a vessel traffic service or that is necessary in the interests of vessel safety.</p>	<p>Courts have generally construed the term “navigation equipment” broadly to encompass various types of devices and systems that contribute to the safe and efficient navigation of vessels, including radar systems, electronic charting systems, and automatic identification systems [...] (See <i>United States v. Evergreen International S.A.</i>, 531 F.3d 321 (4th Cir. 2008); <i>United States v. American Commercial Lines L.L.C.</i>, 759 F.3d 420 (5th Cir. 2014)).</p>

Explanation (Long)

The term “navigation equipment” in the context of 46 U.S. Code § 70001 has not been extensively litigated in the courts. However, the courts have addressed the broader issue of vessel safety and equipment requirements, acknowledging the importance of proper navigation equipment to ensure maritime safety.

Courts have recognized the importance of navigation equipment in maintaining maritime safety. In *United States v. Evergreen Int’l Corp.*, 531 F. Supp. 2d 240 (E.D.N.Y. 2008), the court emphasized the need for vessels to properly install and use such equipment to prevent accidents and maintain safety on the high seas. [...]

In other cases, courts have found that the failure to properly maintain or use navigation equipment can result in unseaworthiness claims. See, e.g., *In Matter of Hechinger*, 890 F.2d 202 (9th Cir. 1989) (holding that a vessel’s lack of functioning navigation equipment rendered it unseaworthy).

In summary, while the term “navigation equipment” has not been extensively litigated in the context of 46 U.S. Code § 70001, courts have recognized the importance of proper navigation equipment in maintaining maritime safety and have upheld the Coast Guard’s authority to regulate and enforce the use of such equipment. [...]

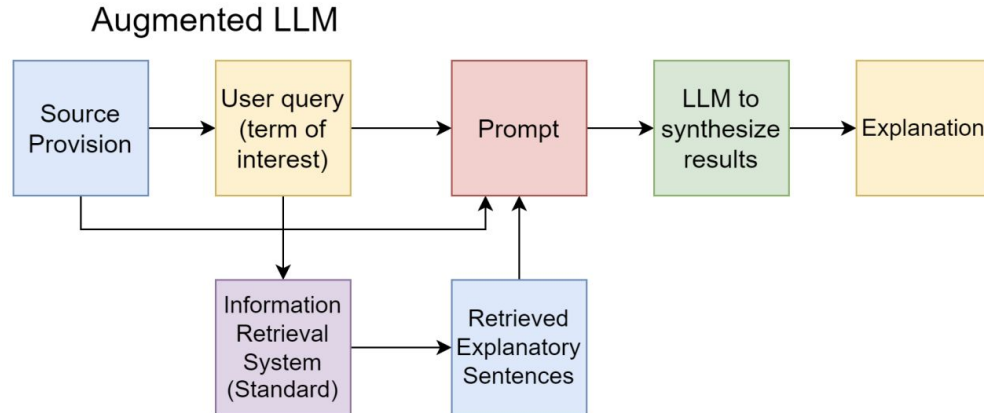
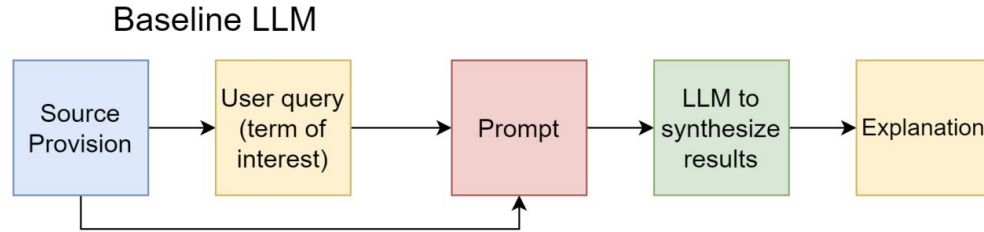
This looks good but how about ...

- Factuality
- Clarity
- Relevance
- Information Richness
- On-pointedness

Research Questions

- (RQ1) What are the limitations of generating explanations directly with GPT-4?
- (RQ2) Does the quality of the explanations improve if the prompt provided to GPT-4 is augmented with relevant information retrieved from case-law and what are the properties of explanations generated in this way?

Systems Architecture



Prompts

You are a legal assistant focused on statutory interpretation.

Term of interest: `{{term_of_interest}}`

Source Provision:

`{{source_provision_citation}}`

`{{source_provision_text}}`

From a legal information retrieval system, you receive a list of sentences from case law mentioning a specific term of interest:

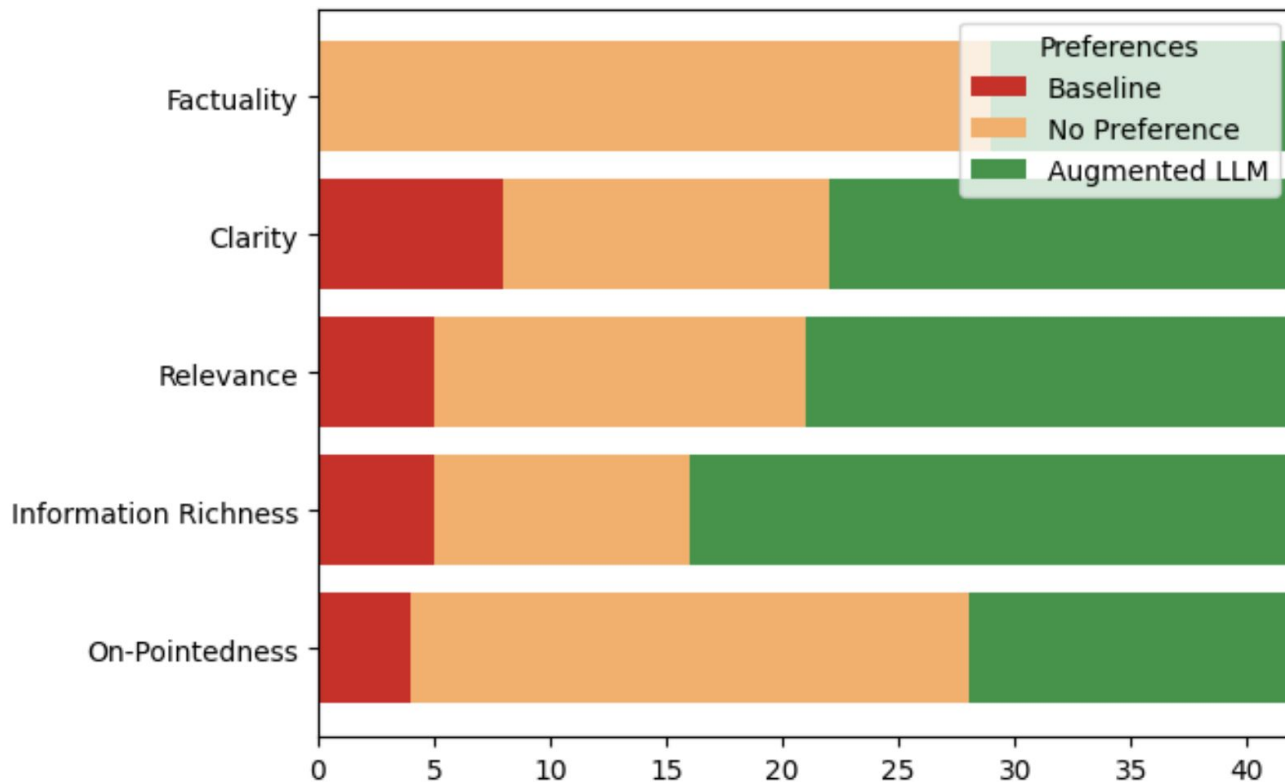
- `{{sentence_1}}` (`{{case_citation_1}}`)
- `{{sentence_2}}` (`{{case_citation_2}}`)

For a user (legal professional), elaborate (in about `{{num_sentences}}` sentence`{{s}}`) on how the specific term of interest from a specified statutory provision has been explained or used by the courts in the past. Summarize the overall patterns present in the whole body of case-law. Cite the most relevant court cases. In your explanations strictly adhere to the case-law. Focus on clarity. Provide a complete comprehensive explanation but do not stray from the topic.

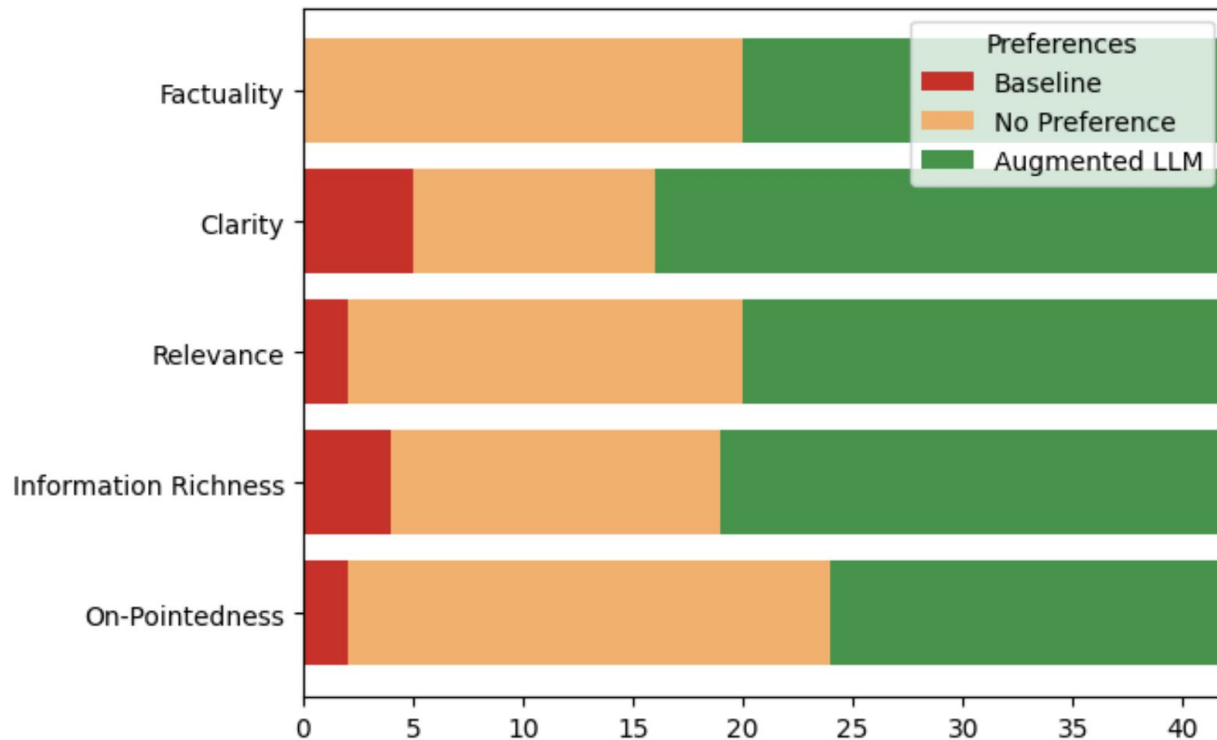
Evaluation

{{Term of interest}}			
{{Source provision}}			
	{{Explanation 1}}	{{Explanation 2}}	Notes
Factuality			
Clarity			
Relevance			
Information Richness			
On-pointedness			

Short Explanation Preferences

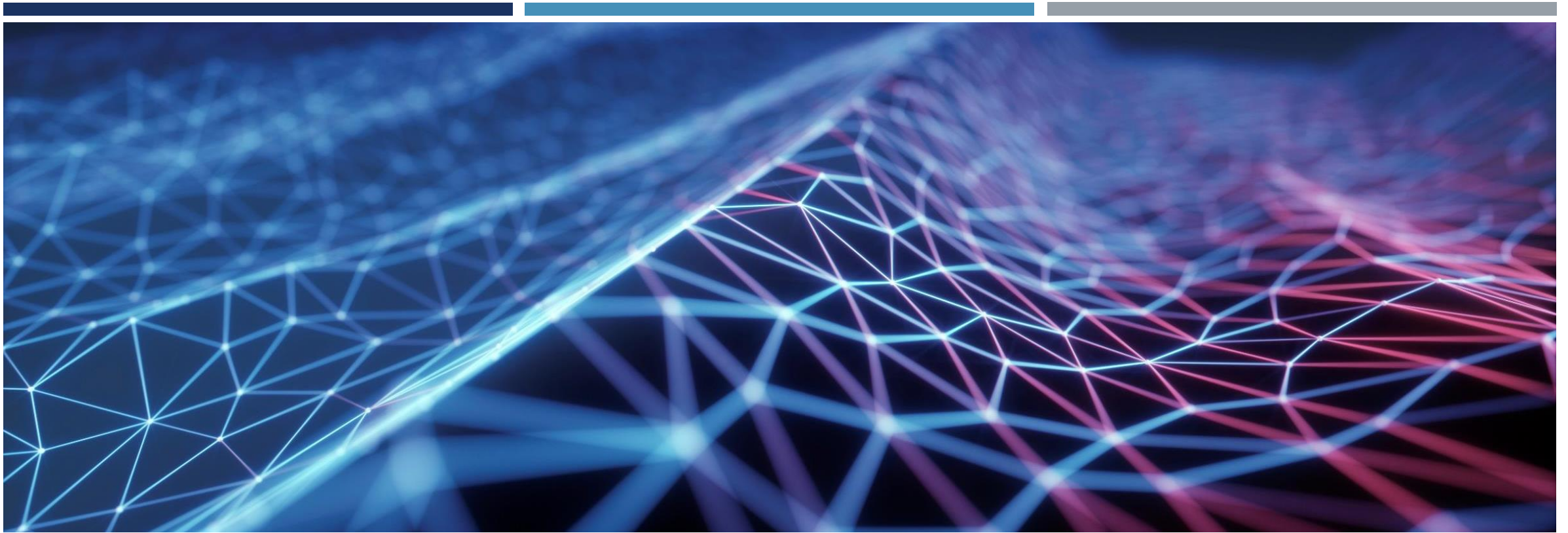


Long Explanation Preferences



Conclusions

- **Direct application** of the LLM produced seemingly high-quality explanations at the surface level, certain limitations were discovered upon performing in-depth analysis.
- The most serious limitations were related to **factuality** of the produced explanations (e.g., citing non-existing case-law).
- The **augmentation** of GPT-4 with a legal information retrieval (IR) component
 - significantly enhanced the explanations' quality across all the studied dimensions (e.g., factuality, clarity, on-pointedness), and
 - overcomes the issues relating to hallucinations.



ARTIFICIAL INTELLIGENCE AND THE LEGAL INDUSTRY

Impact on the practice of law and governance strategies

June 14, 2024

AGENDA

- What is AI, Machine Learning and Generative AI
- AI Use and Application Across Industries
- Benefits of AI
- AI in the Practice of Law
- Navigating the Impact of AI
- Responsible Use of AI by Lawyers
- AI Governance
- AI Privacy and Security Considerations
- Operationalizing Privacy for AI



ARTIFICIAL INTELLIGENCE (AI) VS MACHINE LEARNING (ML)

Artificial Intelligence

- The ability of a machine to display human-like capabilities such as reasoning, learning, planning and creativity.

Generative AI

- The ability to generate new data samples that resemble training data.

Machine Learning

- A type of AI that focuses on the use of data and algorithms to imitate the way humans learn.

AI: USE AND APPLICATION ACROSS INDUSTRIES



- Web search engines
- Digital personal assistants
- Speech and face recognition
- Smartphones
- Machine translations
- Smart homes, cities and infrastructure
- Autonomous cars, navigation systems
- Drones
- Cybersecurity
- Online shopping and advertising

BENEFITS OF AI

**Increased
Efficiency and
Productivity**

**Improved
Decision
Making**

Automation

**Enhanced
Customer
Experience**

**Innovations in
Research and
Development**

**Better
Resource
Management**

**Innovations in
Education**

**Safety and
Security**

**Environmental
Sustainability**

**Assistance for
People with
Disabilities**

AI IN THE PRACTICE OF LAW



- Legal Research and Case Management
- Document Review, Contract Tasks
- Due Diligence
- Predictive Analytics
- eDiscovery
- Legal Compliance and Risk Management
- Virtual Legal Assistants and Chatbots
- IP Management
- Alternative Dispute Resolution (ADR)
- AI powered Self-Help Tools



**Unemployment
and Job
Displacement**



**Social
Inequality**



**Ethical
Concerns**



**Dependency
and Reliability**



**Loss of Human
Skills and
Creativity**



**Environmental
Impact**



Social Isolation

NAVIGATING THE IMPACT OF AI

RESPONSIBLE USE OF AI BY LAWYERS

"To adhere to current requirements and prepare for future regulations, leading companies are instituting Trusted AI programs that embed clear guardrails across the organization and continually adapt to address new, evolving risks. With the right governance, policies, and controls, organizations can strike the right balance between being bold, fast, and responsible to accelerate the value of AI with confidence."

Source: Steve Chase, AI and Digital Innovation Vice Chair, KPMG U.S.



AI GOVERNANCE



- Data Protection Laws (GDPR, CCPA etc.)
 - US AI legislation
 - EU AI Act
- Anti-Discrimination Laws
- Consumer Protection Laws
- Intellectual Property Laws
- Sector-Specific Regulations
- Autonomous Vehicles
- Government Oversight and National Security
- Ethical Guidelines

OECD AI GOVERNANCE PRINCIPLES

- Inclusive Growth, Sustainable Development, and Well-being
- Human-Centered Values, Rights and Fairness
- Transparency and Explainability
- Robustness, Security, and Safety
- Accountability
- Privacy and Data Governance
- Openness and Collaboration
- Responsible AI Research and Innovation
- AI Skills and Workforce Adaptation
- International Cooperation



Data Protection

Data Security

Bias and Fairness

Confidentiality


Regulatory Compliance

Due Diligence

**AI PRIVACY AND SECURITY
CONSIDERATIONS**



Ensure compliance with privacy regulations



Implement procedure for data inventory



Establish legal foundation for usage



Conduct evaluations



Formulate AI policies



Foster awareness of automated decision-making and profiling regulations

OPERATIONALIZING PRIVACY FOR AI

NIST: PRACTICAL TIPS FOR AI DATA AND PRIVACY MANAGEMENT

1

Determine the level of risk you can accept

2

Identify the tools and controls suitable for your company

3

Implement standardized, measurable controls

4

Authorize or accept the risk

5

Zero risk is unattainable



THANK YOU