AI & TC

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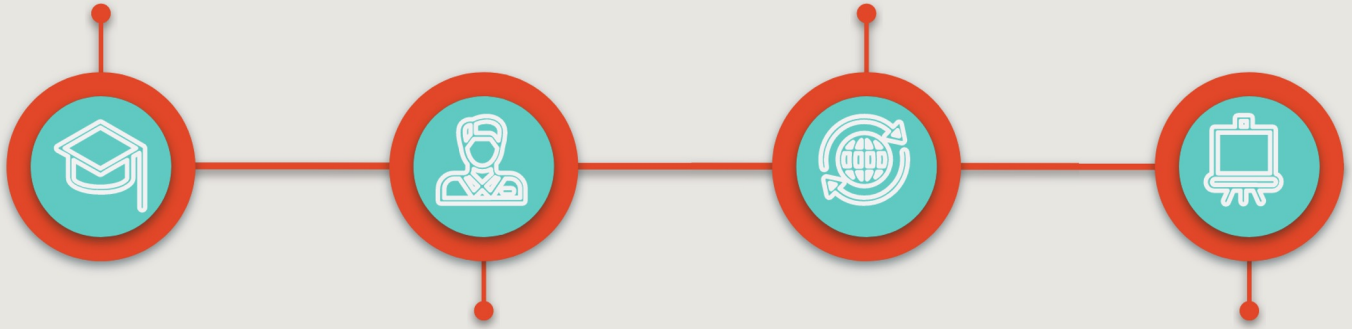
Carnegie Mellon University

Computer Engineer

Software development, user interface design, project management, programming

Researcher

Socio-technical audience analysis research (UX, accessibility, social justice, artificial intelligence, community engagement)



Technical writer

Software documentation, content strategy, content analysis, multimedia content production, practitioner

TIBCO citrix sas

Teacher and mentor

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GEORGE MASON UNIVERSITY

SIGDOC
Special Interest Group on Design of Communication

NC STATE UNIVERSITY

AI in STEM

ai in stem

All | News | Images | Videos | Books | More | Tools

Past year | Sorted by date | Hide Duplicates | Clear

Techopedia

AI in Biotechnology: Interview with Dr Fred Jordan, FinalSpark

Jordan discussed how FinalSpark uses living neurons from human stem cells for advanced computing. We also talked about the ethical considerations of this...

1 hour ago

ClarkNow

'You can do it, too' - Clark Now | Clark University

... Technology students and other STEM majors. ... One of those changes is the speedy development of artificial intelligence, or AI, technology and its impact on the...

1 hour ago

Show Me Mizzou

Virtual reality simulations can help autistic people complete ...

Using artificial intelligence (AI), the research team found that autistic ... technology, engineering and math (STEM)-related fields," Glaser said. "These...

2 hours ago

NWI Times

Hammond students take part in AI and STEM event at PNW

Hammond middle school and high school students engaged with artificial intelligence and activities involving science, technology engineering and math at an...

1 day ago

JD Supra

Biden's Artificial Intelligence Proposals May Help High Skilled ...

In addition, the program would inform top STEM talent of nonimmigrant and immigrant visa options and potential expedited adjudication of their visa petitions...

1 day ago

AI in the Humanities

ai in english majors

All | News | Images | Books | Videos | More | Tools

Past year | Sorted by relevance | Clear

The New Yorker

The End of the English Major

(English majors, on average, carry less debt than students ... "Now they would be about people working in artificial intelligence or natural-language processing.

Feb 27, 2023

Massachusetts Daily Collegian

Why is AI only coming for English Majors?

AI may be adept at accessing, analyzing and reproducing pre-existing work from writers, but it cannot create something entirely original. Its abilities may be...

Oct 4, 2023

Inside Higher Ed

The English Degree Is Great Job Preparation

As we confront a world where artificial intelligence has a greater and greater presence, I think some good old humanities majors who can problem-solve and have...

Feb 28, 2023

The American Genius

Why English majors are the future of the AI revolution

But that is where the English major powers come in – copywriters are paid well because they can not only write skillfully, but because they can look at what you...

Oct 12, 2023

Bloomberg.com

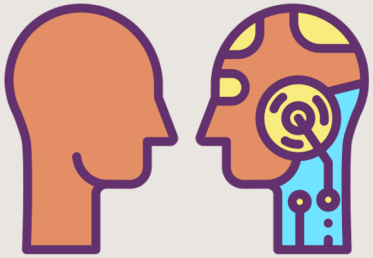
ChatGPT vs. English Major : AI Writes Essays But Can't ...

Will all the future English majors be chatbots? But first… Today's must ... But at the same time, a world where people outsource more and more of their writing to...

Mar 17, 2023

Transhumanism

Humans can and should use technology to transcend their biological limitations



Posthumanism

The traditional concept of "human" is no longer relevant, and we need to rethink our relationship with technology.

Augmentation

The use of technology to improve human capabilities. It is a practical way to improve our lives, and it is already being used in a variety of ways.

(Dégallier-Rochat, et. al., 2022)

Transhumanism

Humans can and should use technology to transcend their biological limitations

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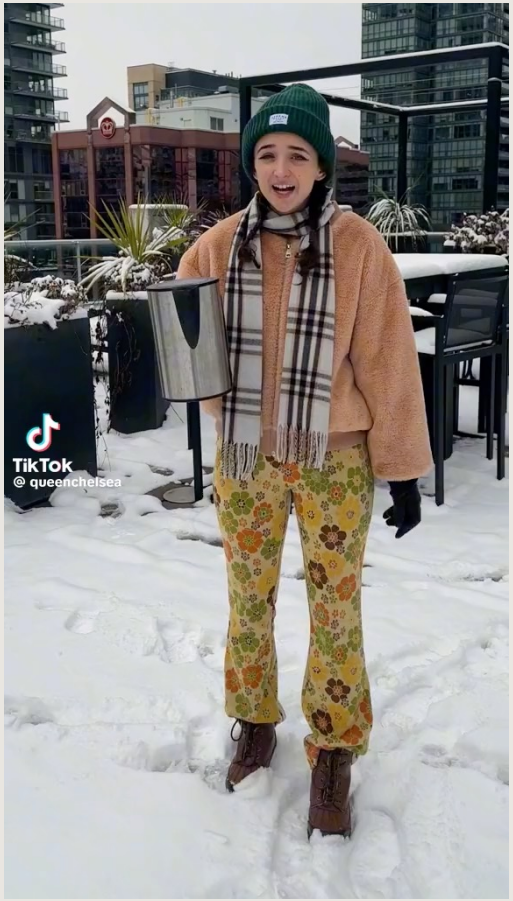
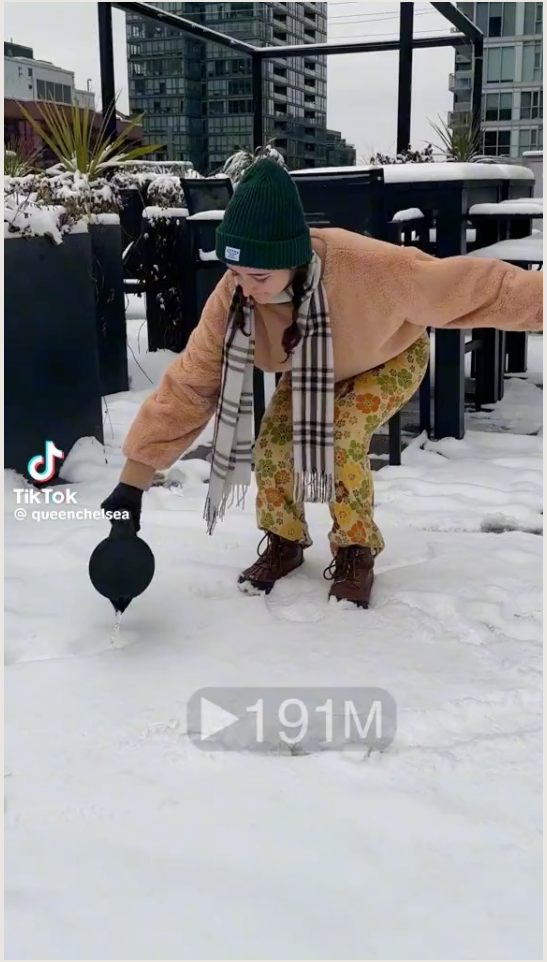

TikTok
@ queenchelsea


TikTok
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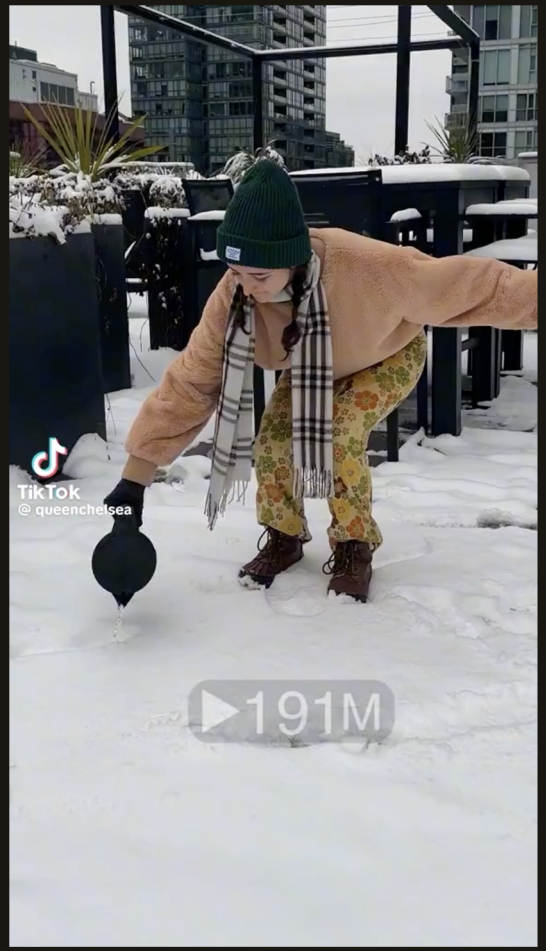
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@ queenchelsea
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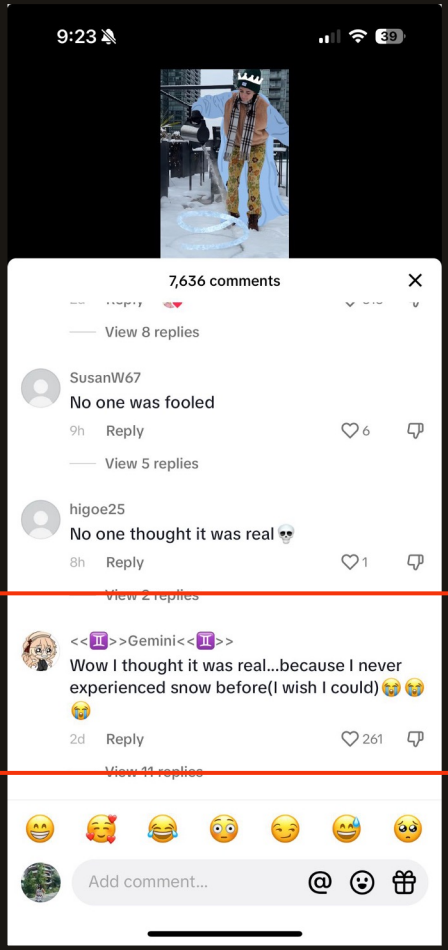
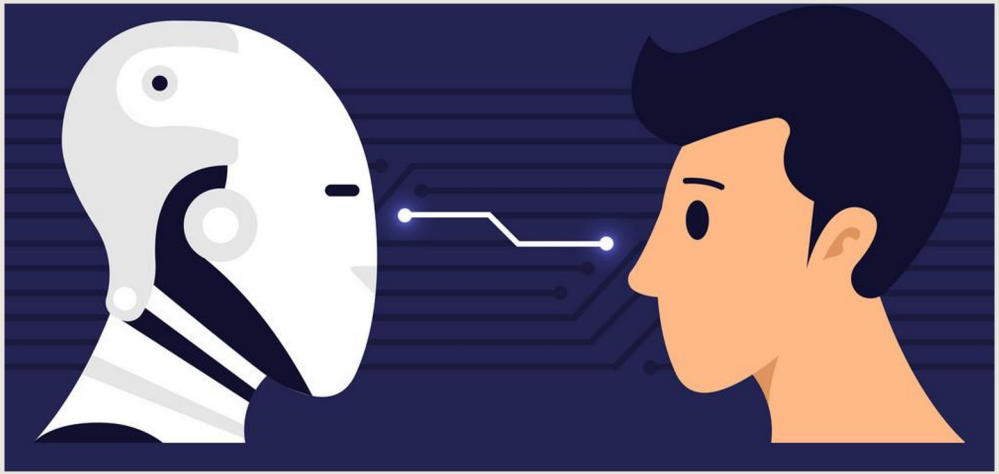
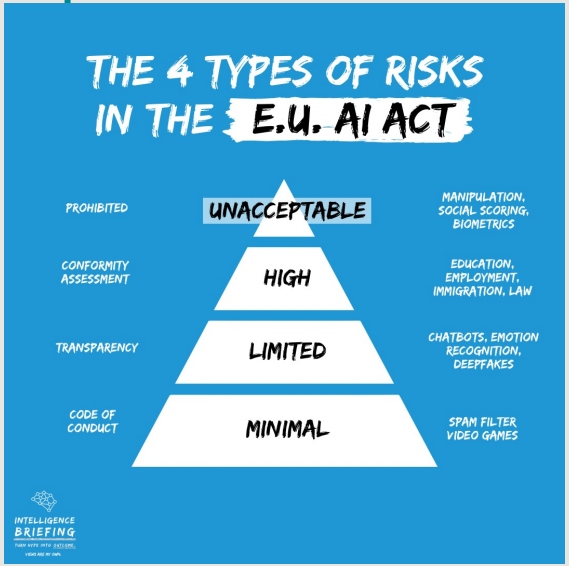

9:23
7,636 comments
View 8 replies
SusanW67
No one was fooled
9h Reply 6
View 5 replies
higoe25
No one thought it was real 💀
8h Reply 1
View 2 replies
<<♊>>Gemini<<♊>>
Wow I thought it was real...because I never experienced snow before(I wish I could) 😭😭 😭
2d Reply 261
View 11 replies
Add comment...

AI VS Human

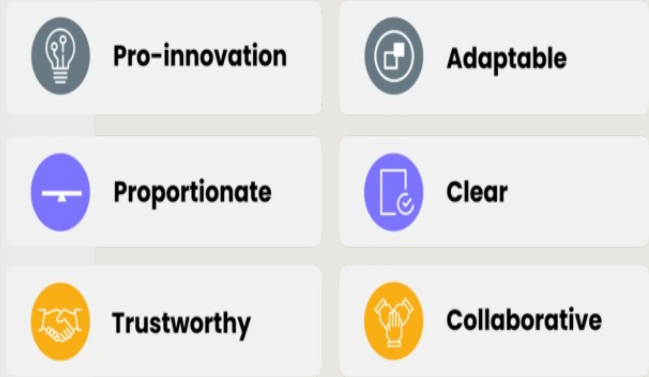


EU AI Act



Risk prevention

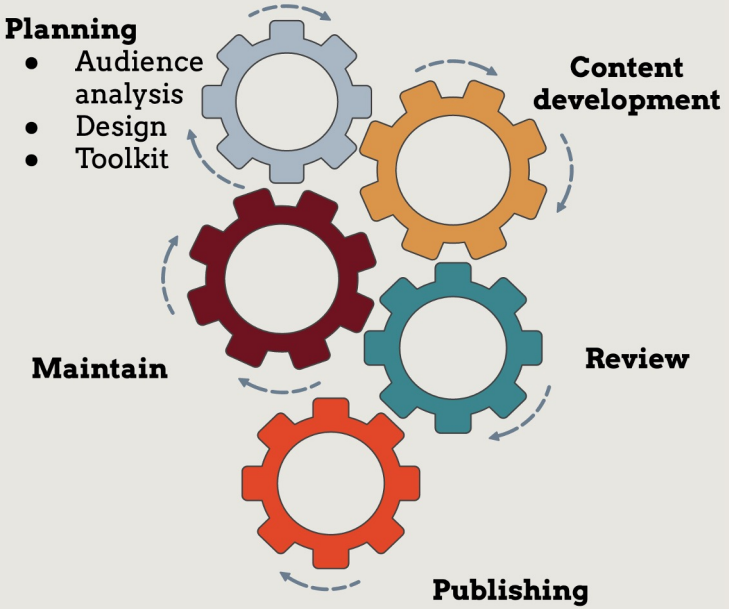
UK AI Action Plan



Pro-innovation

US EO on AI

Safe, Secure, and Trustworthy development



Documentation Development Life Cycle (DDLC)

Technical communication involves the delivery of clear, consistent, and factual information—often stemming from complex concepts.

Human augmentation and AI in TC

CONTENT DEPLOYMENT

01 AI transparency

CONTENT DEVELOPMENT

02 Rhetorical prompt-engineering

03 Ethical editing

USER RESEARCH

04 User analysis through users' contributions

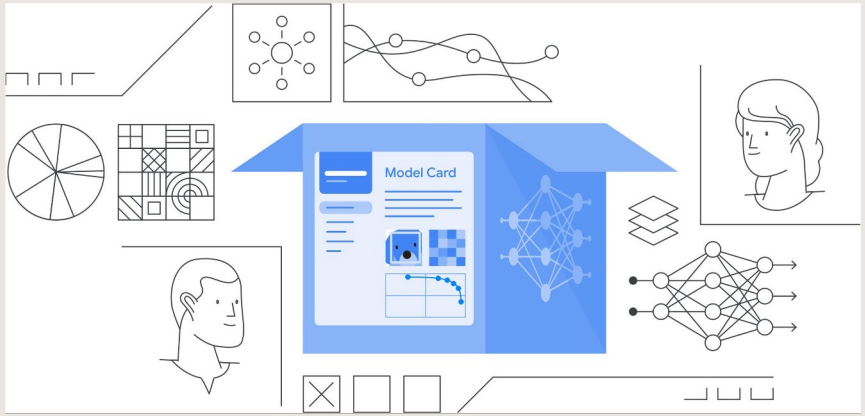
05 Equity and social justice

01

AI transparency

CONTENT
DEPLOYMENT

Model Cards for AI Transparency



- Model cards are a standardized way of documenting the key information about an AI model, including its training data, performance metrics, and potential biases.
- Model cards can help users understand how an AI model works and make informed decisions about how to use it.
- *Other terms:* Method cards, Datasheets for Datasets, FactSheets, Data Statements

Model Cards for AI Transparency: Literature review

Users

(Wadhwani & Jain, 2020; Nunes, et. al., 2022)

- Producers
- Agents
- Reviewers
- Users

Standards

(Mitchell, et. al., 2019)

- Consistent
- Comprehensive
- Intelligible and Concise
- Explainability, Uncertainty
- Principles
  - Flexible
  - Modular
  - Extensible
  - Accessible

Evaluation

(Boyd, 2021; Crisan et. al., 2022; Pushkarna, et. al., 2022)

- Tailored for stakeholders
  - Stakeholders, Language
- Design Considerations
  - Information Design, Visual and Interaction Design,
  - Implementation, Integrated
  - Tooling
- Guidance
- Trust and Safety
- Sensemaking and Skepticism
  - Contextualization, Data
  - Analysis, Examples,
  - Information Seeking
  - Interpretation

Model Cards for AI Transparency: Literature review

Users

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User research

Standards

(Mitchell, et. al., 2019)

- Consistent
- Comprehensive
- Intelligible and Concise
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- Principles

Writing and Editing

Evaluation

(Boyd, 2021; Crisan et. al., 2022; Pushkarna, et. al., 2022)

- Tailored for stakeholders
- Design Considerations
- Guidance
- Trust and Safety
- Sensemaking and Skepticism

Content strategy and Accessibility

02

Rhetorical prompt-engineering

CONTENT
DEVELOPMENT

Best practices for generating prompts for generative AI

VS

General formula for prompt generation

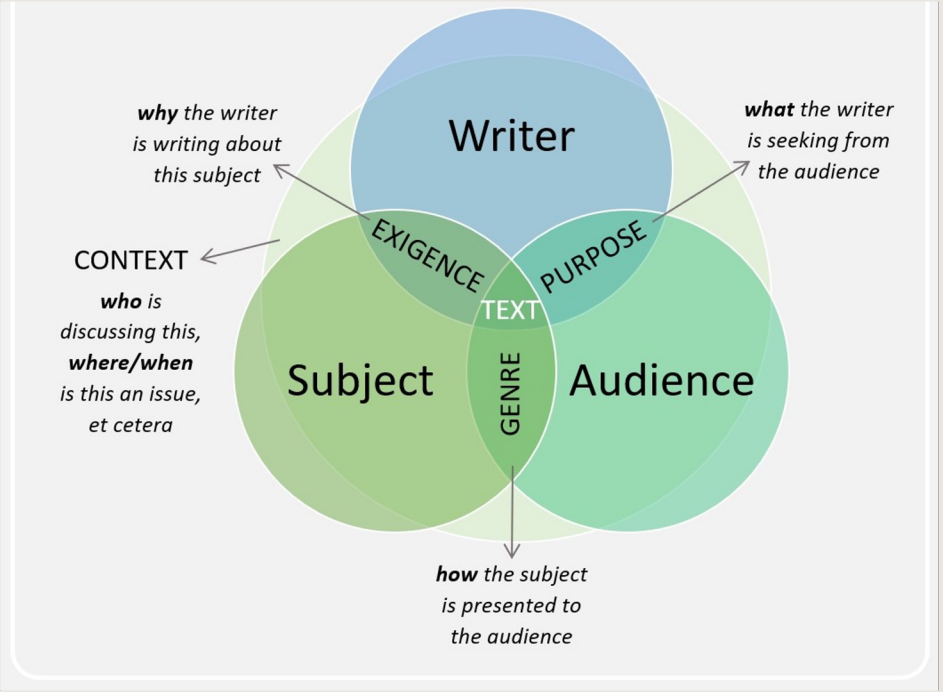
General formula for prompt generation (TLDR!)

Prompt = (audience + genre + purpose + subject + context + exigence + writer)

Audience = the intended reader demographic of the content and their characteristics
Genre = preferred genre selection
Purpose = the author's purpose for writing or the reader's purpose for reading
Subject = focus and details of the content
Context = the relevant circumstances outside of the content
Exigence = the demand to write the content
Writer = the intended writer of the content

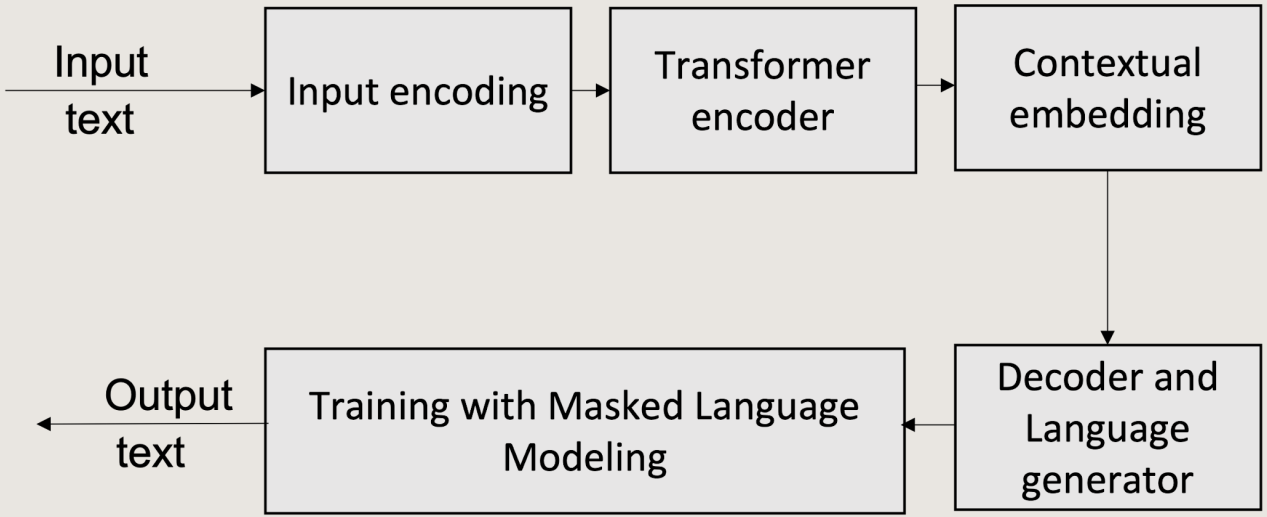
Rhetorical situation

A rhetorical situation is “a natural context of persons, events, objects, relations, and an exigence which strongly invites utterance; this invited utterance participates naturally in the situation, is in many instances necessary to the completion of situational activity, and by means of its participation with situation, obtains its meaning and its rhetorical character”



(Bitzer, 1968)

Generative Pre-trained Transformers architecture



Contextual embedding

Man :: King

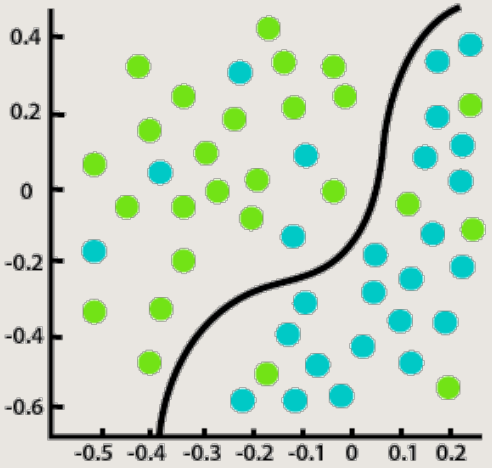
Man :: Brother

Woman :: Queen

Woman :: Sister

Identifying intent through classification

	text	category
27	I am overseas in China, can I get a replacement card?	card_about_to_expire
370	If I am in China, can I still order a new card and if so, how?	card_about_to_expire
441	My card is almost expired. How fast will I get a new one and what is the cost?	card_about_to_expire
477	My card is about to expire. Do I have to go to a branch to order a new card?	card_about_to_expire
521	My card expires soon, will you send me one automatically?	card_about_to_expire
524	My card expires very soon. What is the cost and delivery time to get a new one?	card_about_to_expire
551	Where can I have a new bank card sent to China?	card_about_to_expire
584	How do I get a new expiration date?	card_about_to_expire
605	Are there any express fees if i want my new card faster?	card_about_to_expire
646	My card is almost going to expire.	card_about_to_expire
765	My card expires soon	card_about_to_expire
812	What is the cost and time frame of getting a new card?	card_about_to_expire
833	Help me order a new card that's going to be expired soon.	card_about_to_expire
888	What happens if my card expires?	card_about_to_expire



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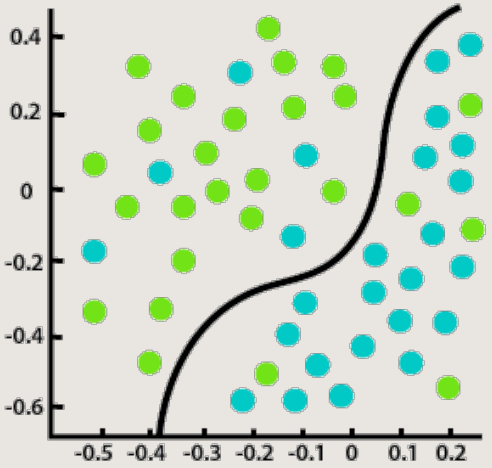

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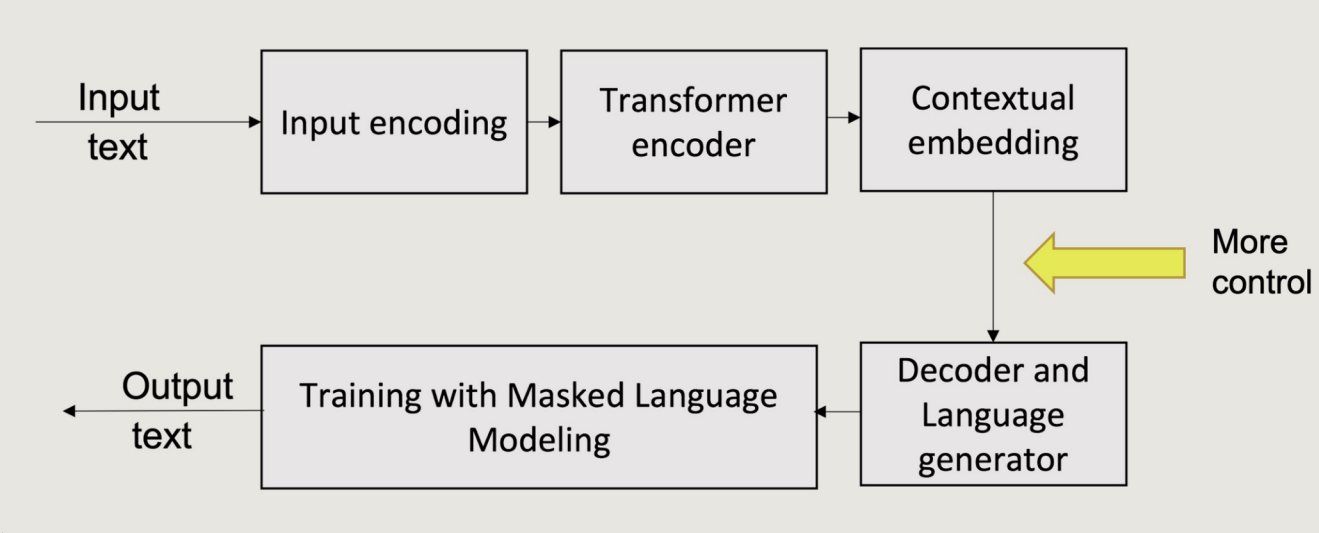

(Zhai, 2022)

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Writer = the intended writer of the content

2. White Paper

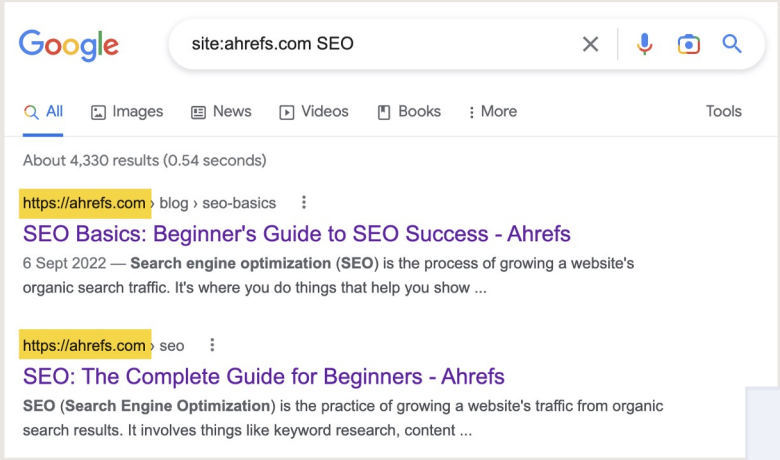
Prompt Variation	Prompt
Writer + context	"**In the current market, no social media app focuses solely on professional networking**. **A group of developers** are looking to launch their app for professional networking with current and potential colleagues."
Writer + **purpose** + context	"In the current market, no social media app focuses on professional networking. A group of developers are looking to launch their app for professional networking and **entice people**."
Writer + purpose + **exigence** + context	"In the current market, no social media app focuses on professional networking. **Based on its potential**, a group of developers are looking to launch their app for professional networking and entice people."
Writer + purpose + exigence + **genre** + context	"In the current market, no social media app focuses on professional networking. Based on its potential, **write a white paper** for a group of developers on their professional networking app to entice readers."
Writer + purpose + exigence + genre + **subject** + context	"In the current market, no social media app focuses on professional networking. Based on its potential, write a white paper for a group of developers on their professional networking app to entice readers. **Be sure to include features of the app that address the defined problem."**
Writer + purpose + exigence + genre + subject + **audience** + context	"In the current market, no social media app focuses on professional networking. Based on its potential, write a white paper for a group of developers on their professional networking app to entice **users and potential investors**. Be sure to include features of the app that address the defined problem."

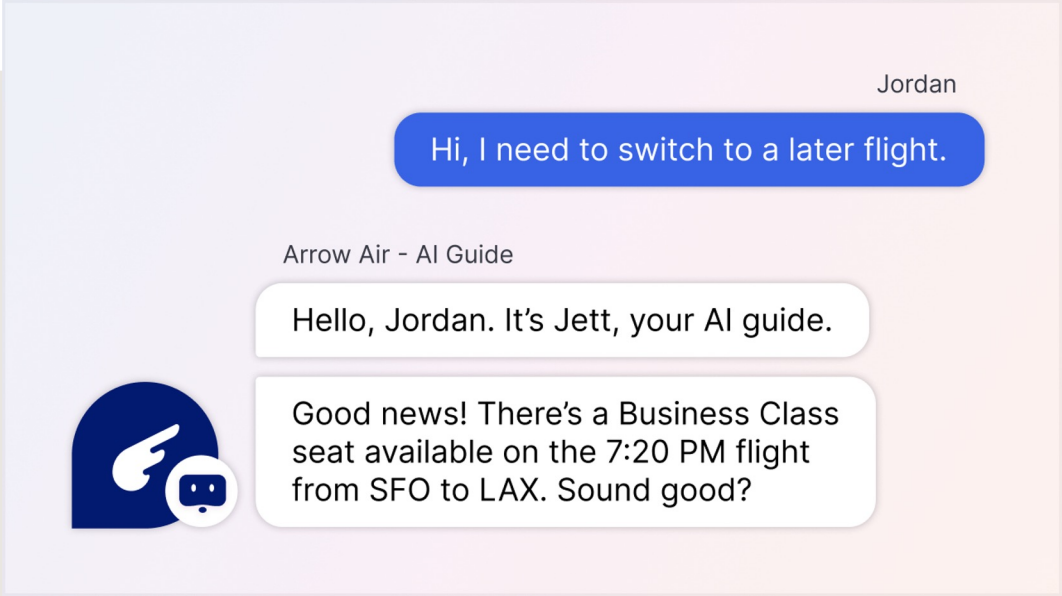
Rubric Development

Table 2 Rubric considering AI-generated components to assess work

Criteria	A	B	C	D
Readers/Audience *Characteristics* - Audience is explicitly mentioned - Style and voice are used to compliment audience demographic and attitude - Specified recommendations or actions are catered toward the audience	Audience is clearly considered in text and all three characteristics are present.	The audience is frequently considered and at least two characteristics are present.	The audience is somewhat considered and at least one characteristic is present.	The audience is considered but no evidence found
Rhetorical Purpose	Purpose of text is clearly explained and highly targeted for a specific audience.	Purpose is explained and targeted for a specific audience.	Purpose is mentioned and somewhat targeted for a specific audience.	Purpose is mentioned but not targeted for a specific audience.
Language Use *Errors* - Spelling, grammar, word usage, and punctuation	1 or fewer errors per page.	2 or fewer errors per page.	3 or fewer errors per page.	4 or more errors per page.
Genre *Specified Characteristics* - User Guide: task based instruction - Memo: letter format - White Paper: introduction, body, and conclusion	The text is structured as belonging to a certain genre with all specified characteristics.	The text is defined as belonging to a certain genre with some characteristics.	The text is defined as belonging to a certain genre with limited characteristics.	The text is defined as belonging to a certain genre with none of the specified characteristics.
Organization of Writing *Specified Principles and Organization* - User Guide: chronological organization, less than seven bullet points or steps, conciseness, active voice, limited use of long sentences - White Paper: spatial organization, summary at the beginning of the paper, background on specified issue and presented explanation, appropriate conclusion/solution	The text contains all specified principles relevant to genre and uses the appropriate organization type.	The text contains few specified principles relevant to genre but uses the appropriate organization type.	The text contains either a few specified principles relevant to genre or the appropriate organization type.	The text contains, neither, the specified principles relevant to genre or the appropriate organization type.

Other uses of rhetorical prompt engineering





03
Ethical editing

CONTENT
DEVELOPMENT

Technical editing

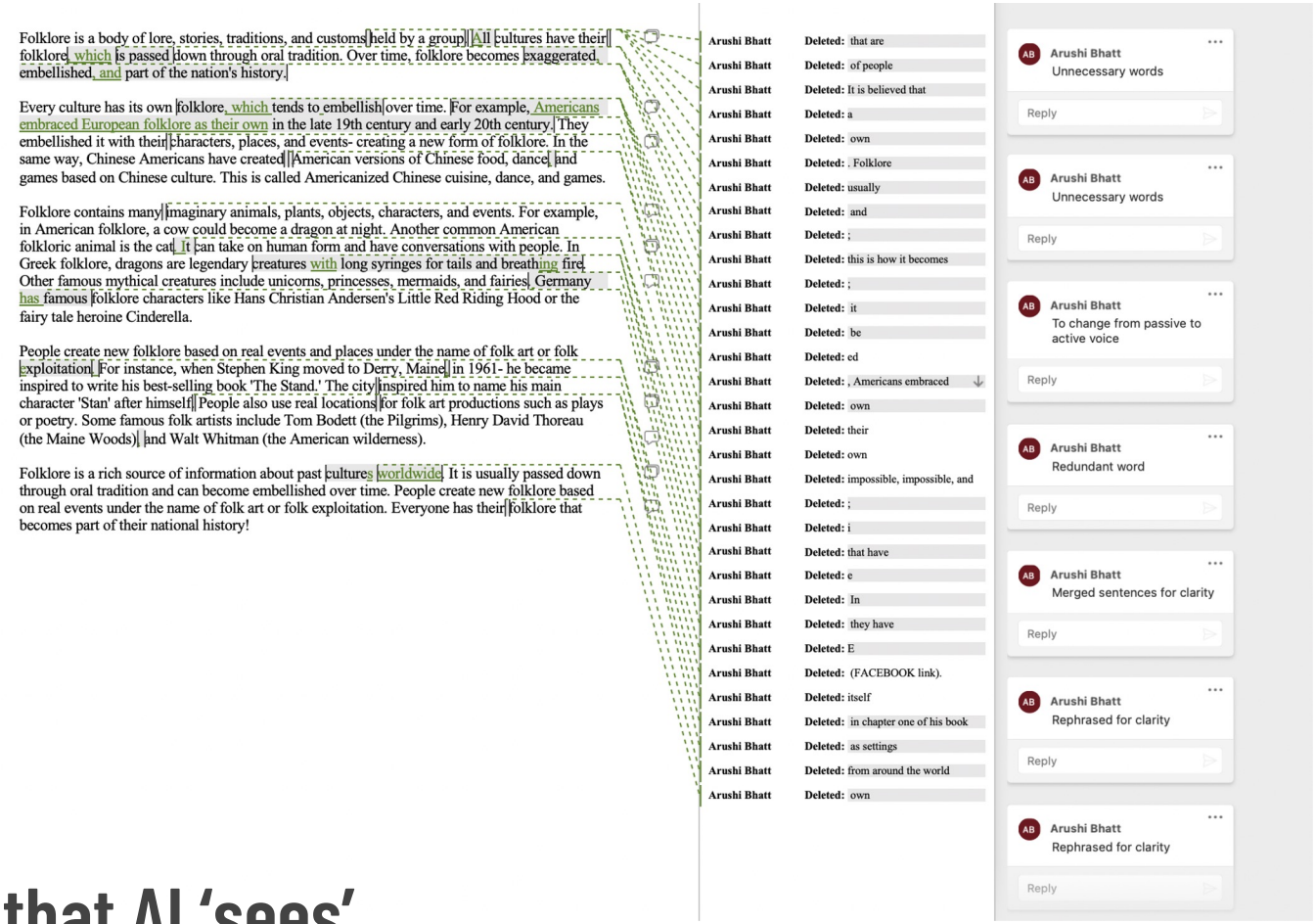
Programmatic approach

- Knowledge of the rules involved (grammar, punctuation)
- Knowledge of how to apply the rules correctly
- Ability to apply the rules consistently throughout an editorial project
- Ability to interpret the rules to the author

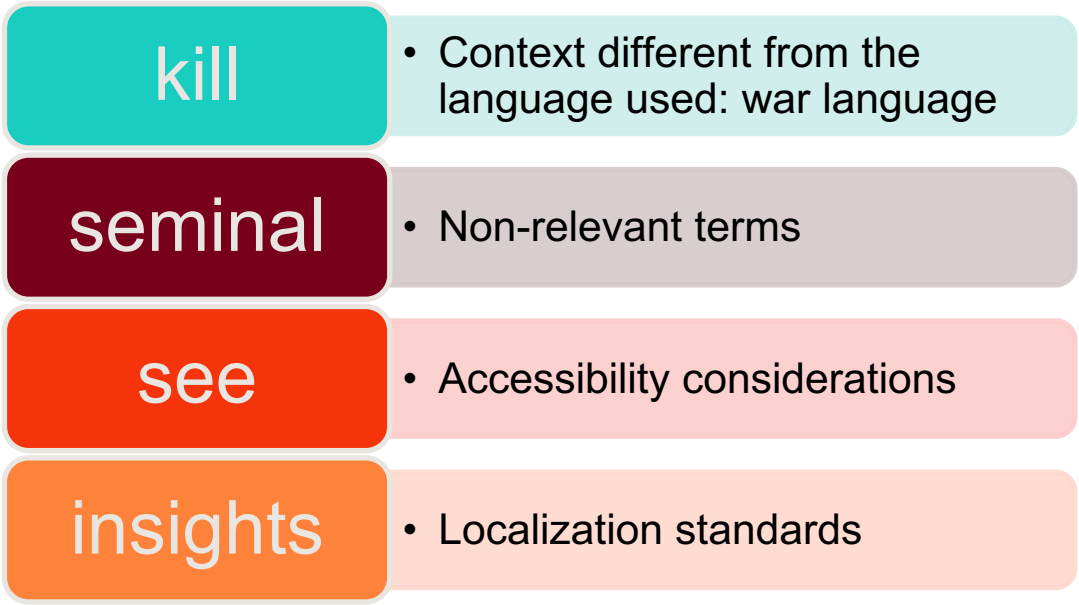
Rhetorical approach

- Breadth of perspective
- Investigative persistence
- Flexibility
- Rhetorical knowledge and taste
- Empathy
- Self-confidence

(Buehler, 2003)

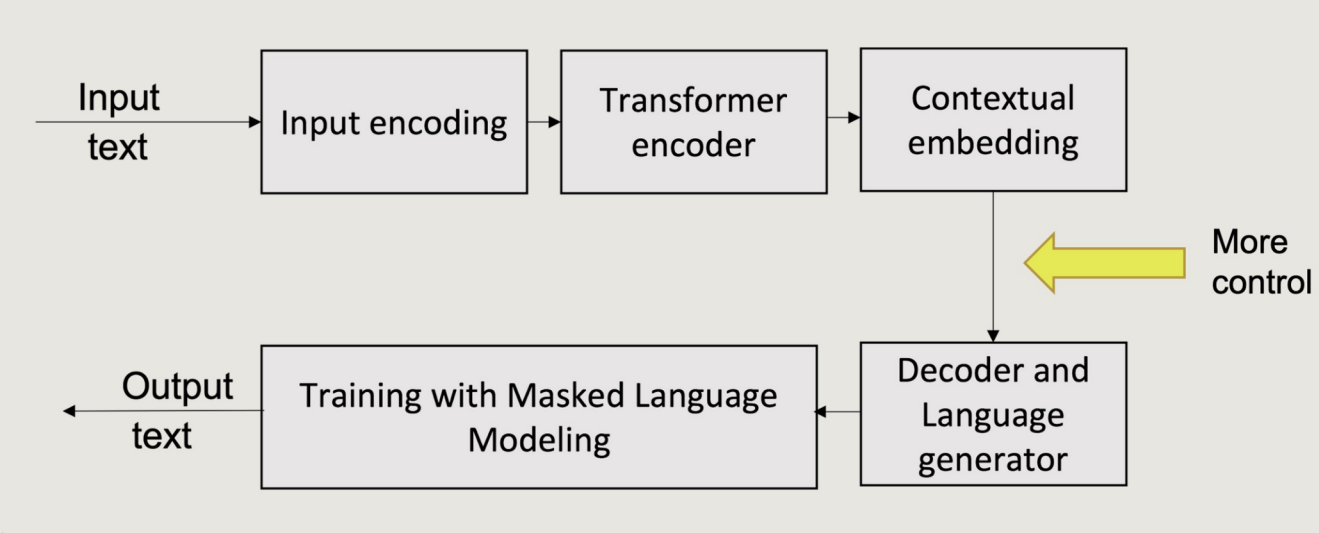


The edits that AI ‘sees’



The edits that AI cannot see

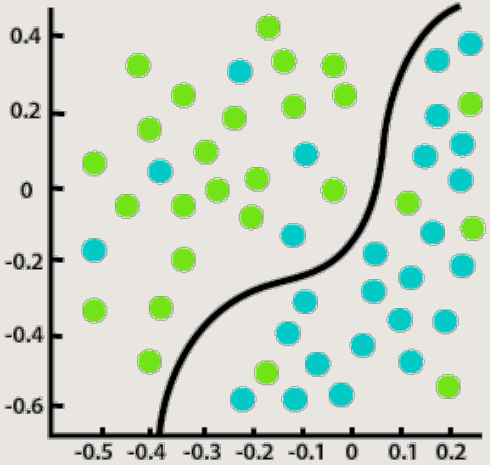
Generative Pre-trained Transformers architecture

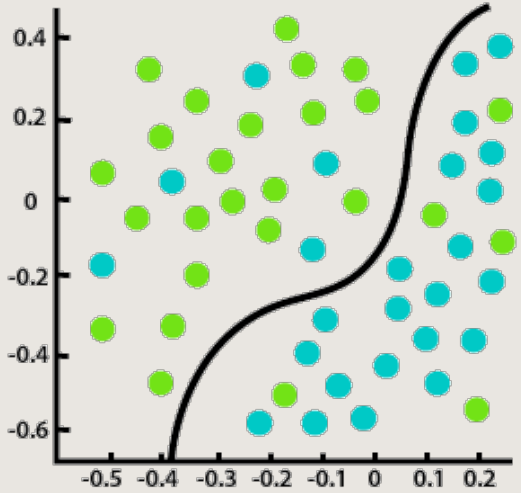


(Zhai, 2022)

Man :: King

Woman :: Queen





Man :: King

Man :: Brother

Man :: Doctor

Woman :: Queen

Woman :: Sister

Woman :: ?

Man :: King

Man :: Brother

Man :: Doctor

He :: Realist

.

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Woman :: Queen

Woman :: Sister

Woman :: Nurse

She :: Feminist

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Canons of rhetoric

- Invention
- Arrangement
- Style
- Memory
- Delivery

We make choices throughout the process of developing content. The five canons help us organize how we examine those choices.

Framework for ethical editing

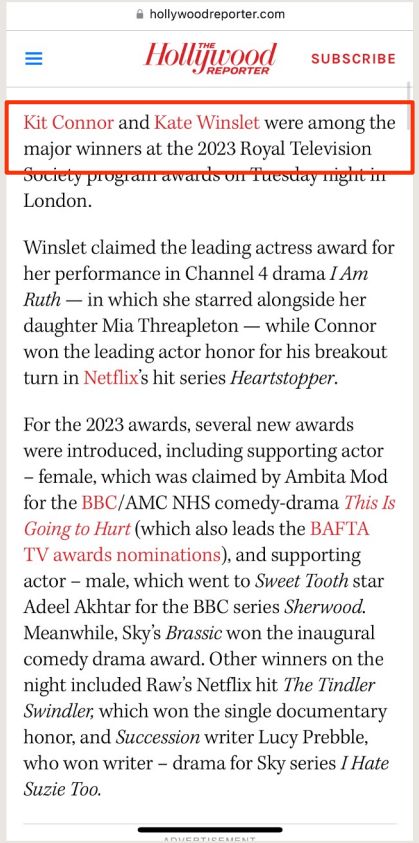
Possible Factors to fill in the ___

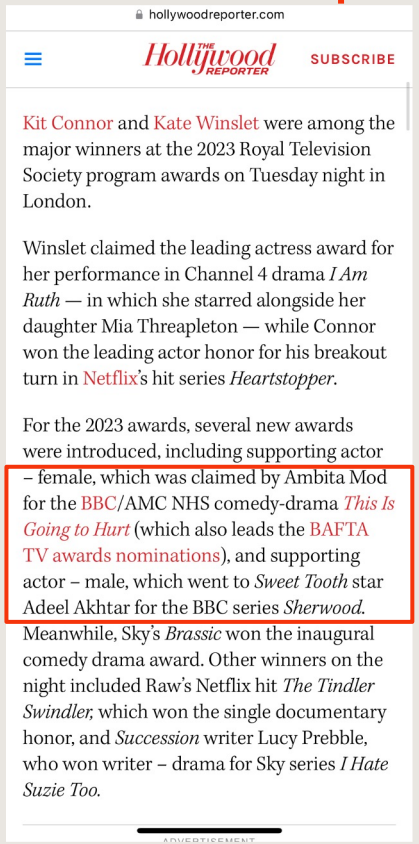
Race
Ethnicity
Culture
Religion
Sex
Gender
Sexual Orientation
Age
Socioeconomic Status

With each canon, we can ask how we are or are not communicating about ____, with ____ being any factor of concern for conscious inclusion.

Arrangement

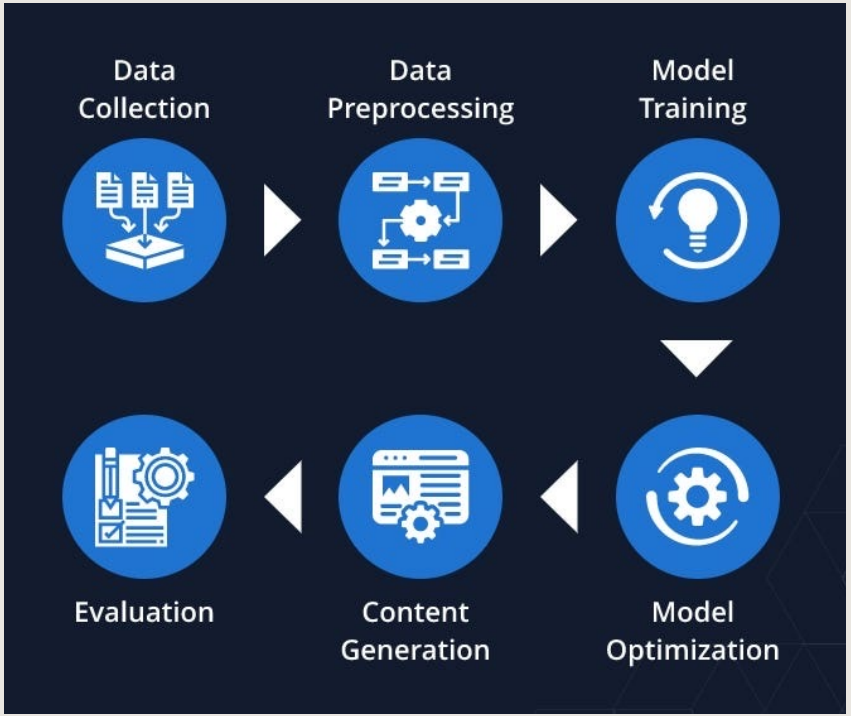
1. Is ____ relevant to your audience?
2. Is ____ relevant to your message?
3. How does your message consider ____?





Uses of ethical editing

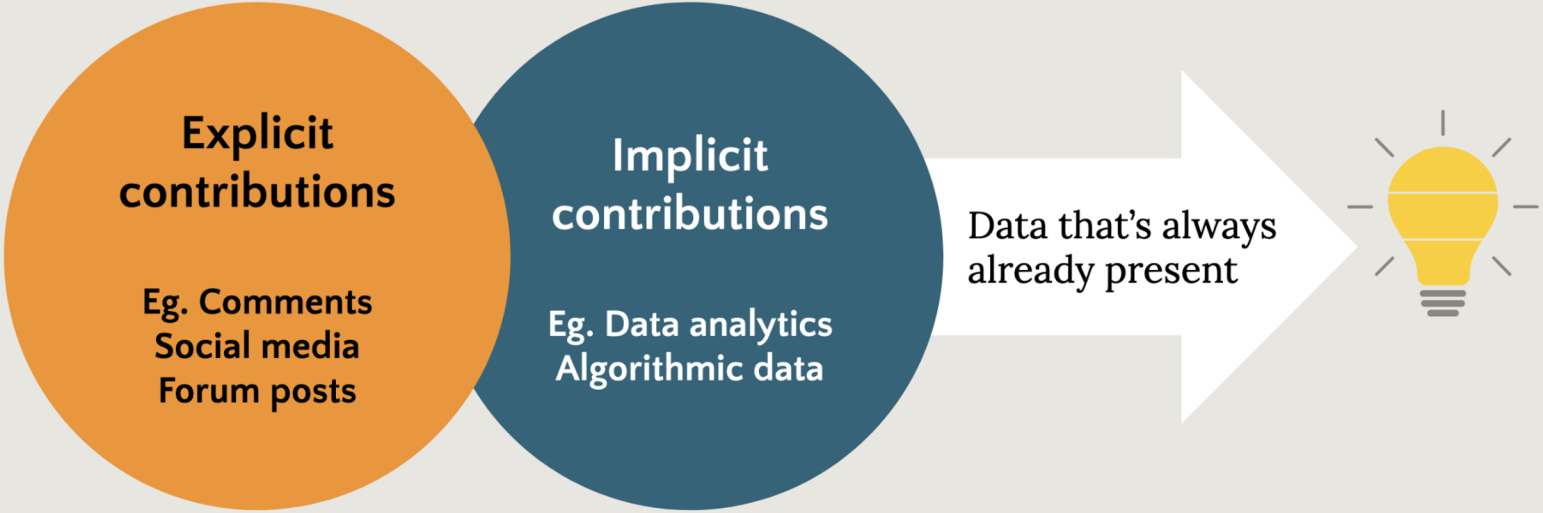
- Data preprocessing
- Fine tuning
- Content evaluation



04

User analysis through users' contributions

Types of interactions for user research



(Schäfer, 2011)

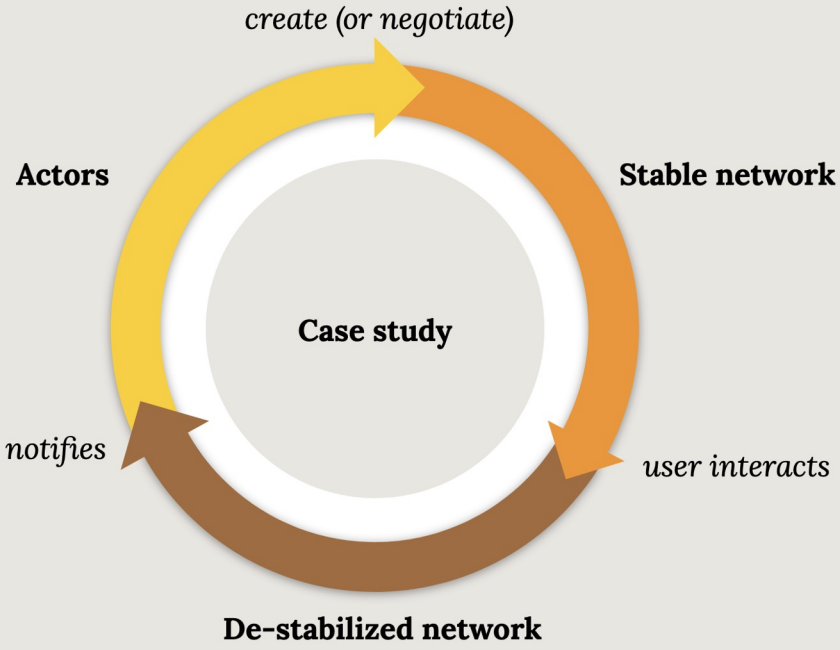
Case study: Web analytics

Data was retrieved from the following tools:

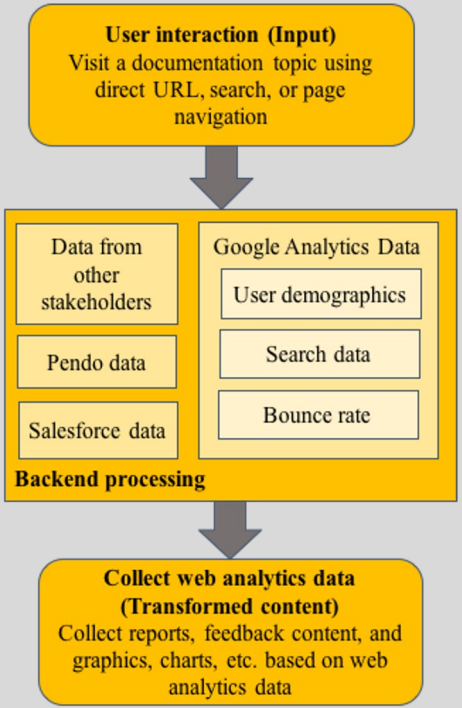
- Google Analytics
- Pendo
- Salesforce

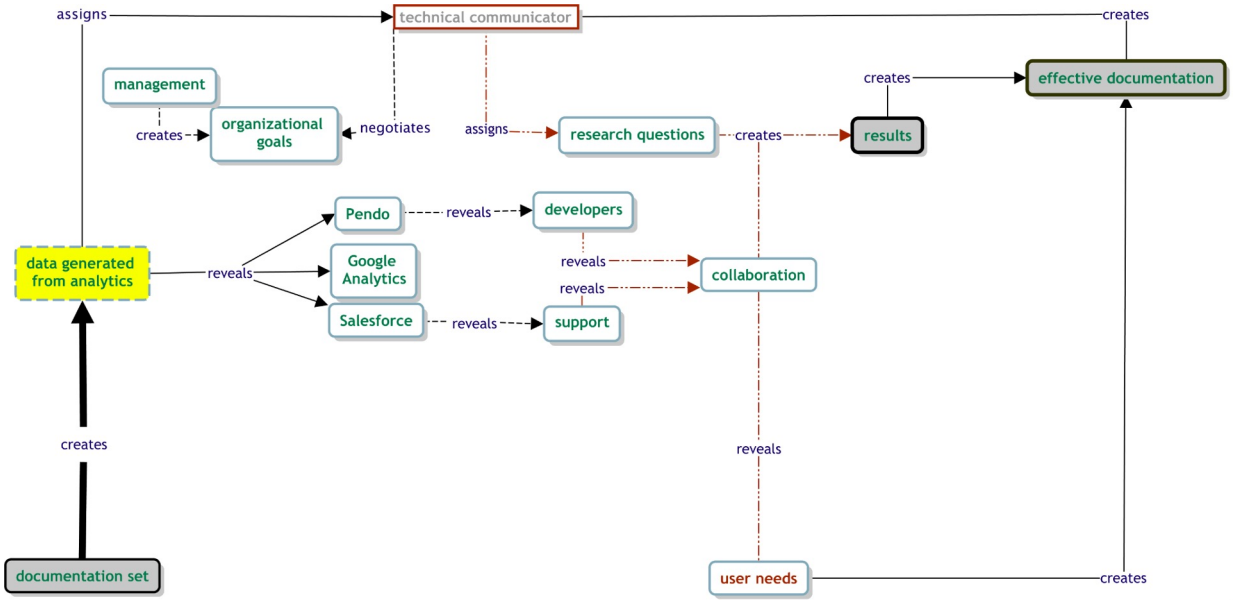
Actor network Theory

"ANT is a social theory framework which puts emphasis on the concept of non-human actors and the interplay between entities with agency, human and non-human actors, as well as relations formed by negotiations and interactions to produce stable, heterogeneous networks of actors with aligned interests".

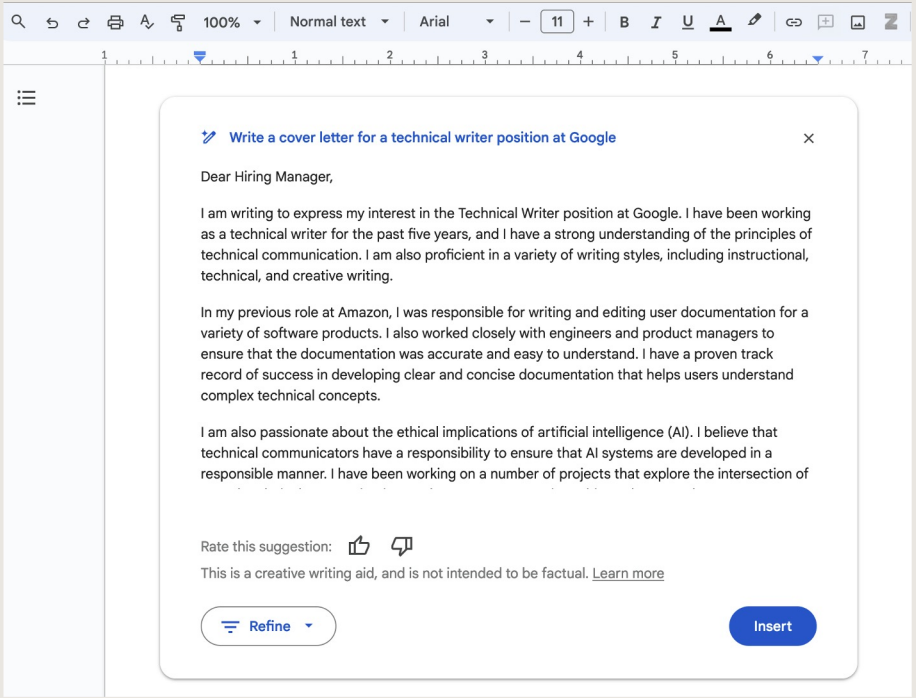


(Law 1992)


User interaction (Input)
Visit a documentation topic using direct URL, search, or page navigation
Data from other stakeholders
Google Analytics Data
User demographics
Search data
Pendo data
Bounce rate
Salesforce data
Backend processing
Collect web analytics data (Transformed content)
Collect reports, feedback content, and graphics, charts, etc. based on web analytics data


assigns
technical communicator
creates
management
creates
effective documentation
creates
organizational goals
negotiates
assigns
research questions
creates
results
Pendo
reveals
developers
data generated from analytics
reveals
Google Analytics
reveals
collaboration
reveals
Salesforce
reveals
support
creates
reveals
documentation set
user needs
creates

With AI, technical communicators will have to build infrastructures that record explicit and implicit contributions in AI tools to know the users better.



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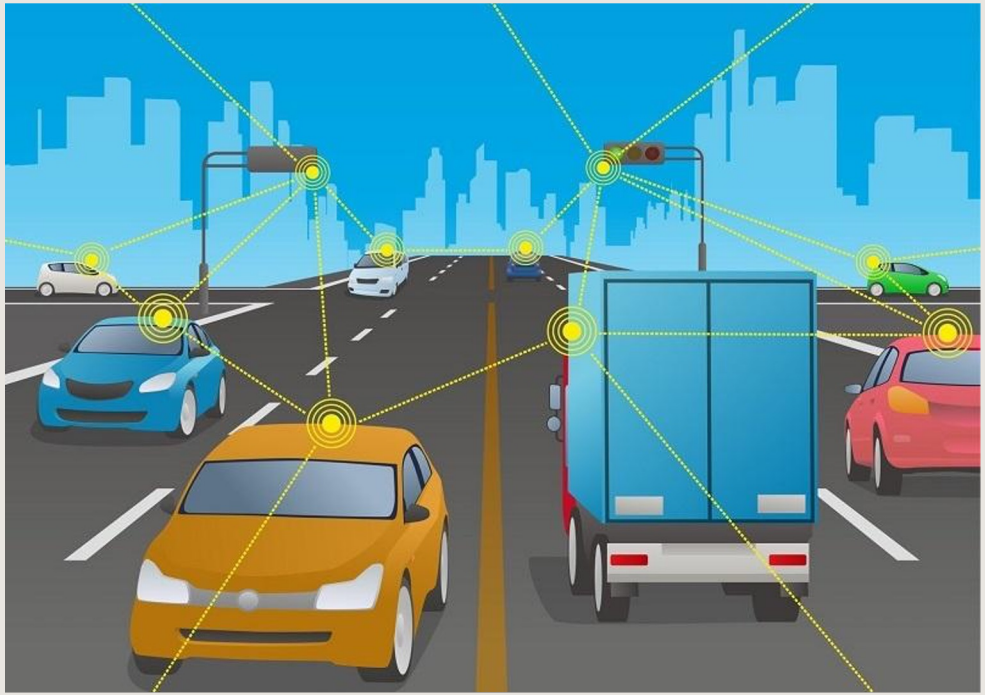
Equity and social justice

Autonomous driving in hybrid environments



Impact of Human Behavior in a Mixed Traffic Environments

Input/Current model

- Traffic conditions
- User (drivers') preconceptions *(Ranade)*
- Existing surveys and human behavior analysis methods *(Ranade)*

Experimental system

- Simulated environment (CCI lab)
  - Hybrid simulator
- Driving performance
- Data
  - Eye-tracking quantitative data
  - Surveys *(Ranade)*
- Observed behavior *(Ranade)*

Outputs/Results

- Inputs for developers that incorporate human behavior findings
- Better simulations
  - Better algorithms
- Policy making
  - New regulations *(Ranade)*
  - Vocabulary and terminology to be included to establish trust among customers *(Ranade)*
- Factors contributing to Vulnerability: Socioeconomic status, age, disability, gender *(Ranade)*

Uses of human augmentation for UI/UX testing

Are Mechanical Turk workers using AI to automate being human?

Researchers have found that nearly half of the workers on Amazon's Mechanical Turk platform are using artificial intelligence (AI) to complete tasks that were originally intended for humans. Mechanical Turk allows users to divide simple tasks into smaller sub-tasks that pay very little but can be completed quickly.

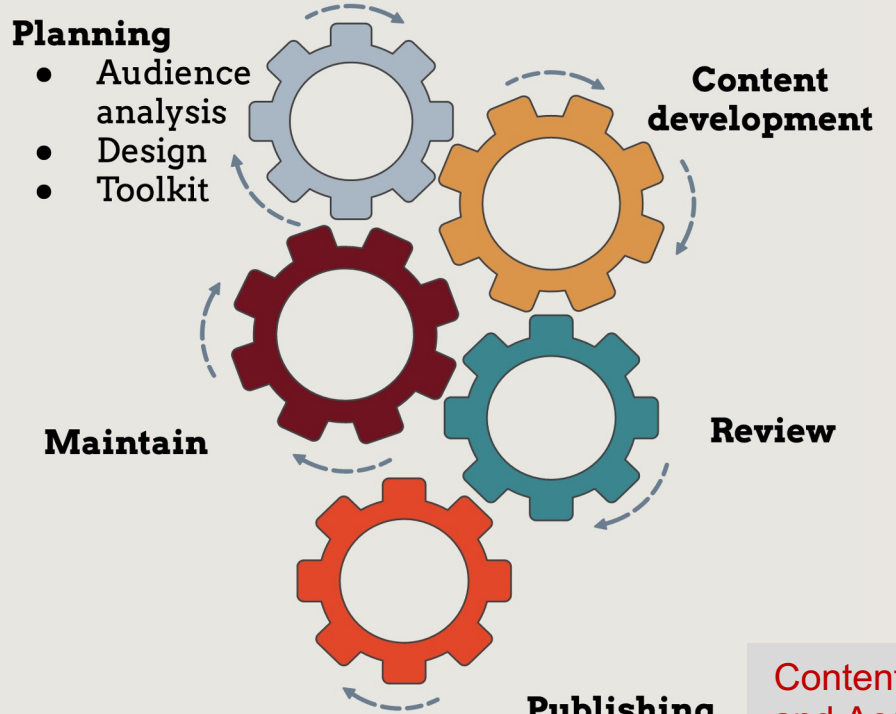
oecd.ai
https://oecd.ai › incidents

Mechanical Turk workers are using AI to automate being human - OECD.AI

Documentation Development Life Cycle (DDLC)

User research

AI tools like UserTesting and Maze for developing instructions.



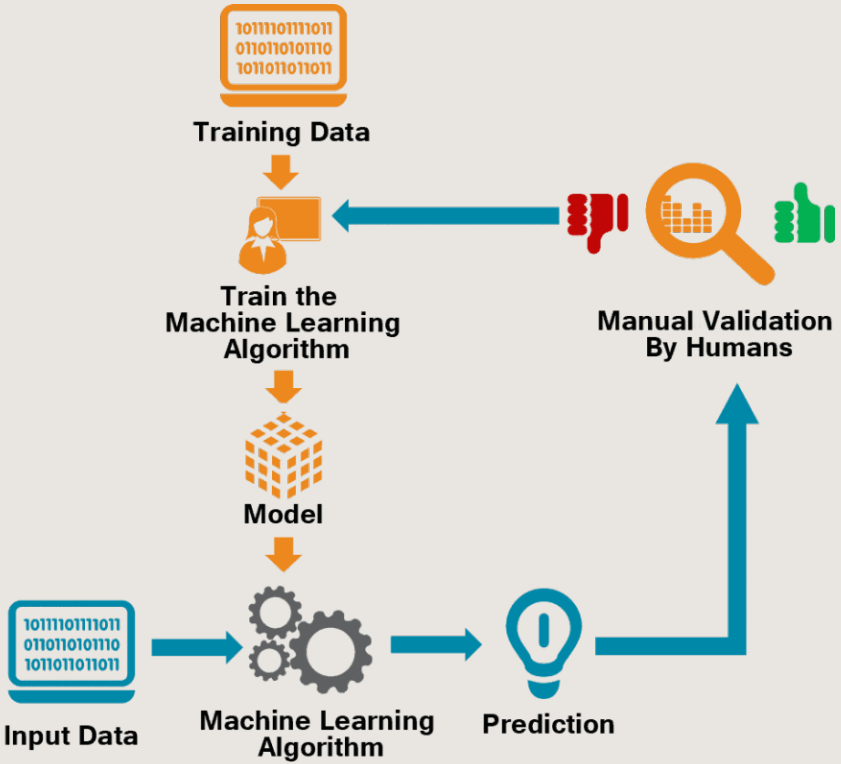
Writing and Editing

AI tools like ChatGPT for developing instructions.

Content strategy and Accessibility

AI tools that enable real-time and context-aware communication with your users

ML development life cycle



Thanks!

dr.nranade@gmail.com

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