

Conceptual operation strategies of artificial intelligence metaphors in Indonesian mass media: A cognitive linguistic study

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ABSTRACT

Public understandings of Artificial Intelligence (AI) in Indonesia are largely mediated by mass media, where metaphor is often used to make complex technologies intelligible for nonspecialist audiences. This study examines how AI metaphors operate conceptually in Indonesian online news through the lens of Cognitive Linguistic-Critical Discourse Studies (CL-CDS), drawing on Hart’s analytical strategies: structural configuration, framing, identification, and positioning. The dataset consists of ten purposively selected articles published between 2019 and 2024 across six major outlets (Kompas, Detik, Kumparan, CNBC Indonesia, ANTARA, and RRI), identified via Google News searches using the keyword phrase “Artificial Intelligence (AI)”. The analysis shows that AI is predominantly metaphorized in three ways: AI as a human-like thinking machine, AI as a decision-making machine, and AI as a data-driven system. These metaphors do not merely simplify technical processes; they also steer audiences toward particular assumptions about agency, authority, and responsibility in AI governance. In practice, the metaphors can legitimize the transfer of trust from human judgment to algorithmic systems while masking the role of institutions that control data and infrastructures. The study offers implications for journalists, policymakers, and academics in communicating AI more reflexively and proposes future work on social media discourse and the ethical consequences of AI framing in the public sphere.

Keywords: Artificial intelligence, cognitive linguistics, critical discourse studies, media framing, metaphor analysis

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INTRODUCTION

Artificial Intelligence (AI) has transitioned from a futuristic concept to a reality that is deeply embedded in our daily lives. It is currently employed to address contemporary challenges across work, education, and various other sectors (Singh et al., 2024; Zhao et al., 2024; Aeni et al., 2024). However, despite its widespread presence, public comprehension of AI is rarely derived from direct technical experience with algorithms. Instead, understanding is largely shaped by the narratives constructed in mainstream media, which serves as the primary interface between complex technology and lay society.

As a central channel for public discourse, the mass media plays a dual role: it translates technological complexity into accessible language and, simultaneously, frames societal meanings. Through the strategic use of metaphors (Hermann, 2023; Sartori & Bocca, 2023), the media does more than merely explain AI; it actively participates in constructing social attitudes and positioning ideological stances toward the technology (Nguyen & Hekman, 2022; Handayani et al., 2024; Masriadi & Bahri, 2024). Scholars such as Kistanto (2017), Wyatt (2021), and Adnyani & Suwastini (2022) emphasize that this mediation serves as a bridge, yet it carries a significant ideological dimension that reflects and shapes the power relations underlying technological development.

When discussing technology, metaphors function paradoxically. On one hand, they act as cognitive aids, simplifying abstract ideas by mapping them onto familiar human experiences. On the other hand, they establish rigid ideological frameworks that dictate how individuals comprehend and react to these technologies (Carbonell et al., 2016; Buzila, 2018). In this sense, metaphors are employed not just to elucidate, but to influence perceptions of a technology that remains inadequately understood.

Common analogies, such as “AI works like a human brain” or “AI as a decision-making machine,” imply that these systems possess autonomy, moral reasoning, and human-like agency.

However, this anthropomorphism is often deceptive. As Mogi (2024) and Mahendra et al. (2024) clarify, AI remains strictly an algorithm-based system analyzing data, devoid of the moral sense or independence inherent to personhood. The persistence of such metaphors highlights their function as tools of power. From the perspective of Critical Discourse Analysis (CDA), these linguistic choices are intrinsically linked to the construction of ideologies (Aydın et al., 2021; Linkevičiūtė, 2025). Wodak & Meyer (2016), Hart (2011), and Mullet (2018) emphasize that language is a site where social power is legitimized or contested.

In media discourse, metaphors can replicate prevailing power structures. For instance, framing AI as a “replacement for humans” creates labor anxiety that serves capitalist narratives of efficiency (Al-Badri & Al-Janabi, 2022; Jupply et al., 2022). Conversely, depicting AI as “just a tool” or a “data-driven system” can conveniently obscure the ethical responsibilities of tech developers (Sindoni, 2024). Thus, analyzing these metaphors is essential for uncovering the hidden ideologies that influence how society accepts or resists technological development. To unpack these complex dynamics, this study moves beyond traditional CDA by integrating cognitive science, specifically adopting the Cognitive Linguistic-Critical Discourse Studies (CL-CDS) framework.

While traditional CDA excels at identifying social inequalities, it often overlooks the cognitive processes behind text production and reception. CL-CDS bridges this gap by examining how cognition mediates the relationship between text and social action (Hart, 2020). This approach posits that meaning is a dynamic conceptual process wherein language interacts with background knowledge to shape ideology. Within this framework, Cognitive Linguistics provides the tools to analyze how abstract concepts like AI are grounded in physical experience (Zlatev & Blomberg, 2015; Zhanalina & Ordahanova, 2015).

Metaphors are viewed not as mere stylistic flourishes, but as fundamental cognitive mechanisms (Casakin, 2019; Guo, 2023). Johnson & Lakoff (2002) argue that metaphors clarify abstract ideas by linking them to familiar domains, a process that is critical for how the public perceives AI. Structural, orientational, and ontological metaphors allow complex data systems to be conceptualized as concrete entities (Masthuroh, 2020; Sylvania et al., 2022), fundamentally altering the public’s cognitive response to the technology.

Methodologically, this study relies on Christopher Hart’s (2020) model of conceptual operations to explore how these metaphors function. Hart identifies four key strategies: structural configuration, framing, identification, and positioning. Structural configuration uses image schemas to set the basic scene of an event. Framing adds emotional and ideological categories to that scene. Identification determines which actors are salient—relying on focal adjustments as described by Langacker (2002)—to direct attention toward or away from specific agents. Finally, positioning establishes the audience’s perspective relative to the event. Together, these strategies subtly direct comprehension, making certain interpretations of AI seem natural while marginalizing others.

Existing research has begun to explore these metaphors, though often with a focus on Global North contexts or specific themes like gender. Sindoni (2024) and Abercrombie et al. (2023), for instance, highlight how gendered metaphors reinforce stereotypes to make AI products seem more “subservient” or consumer-friendly. Similarly, Haula (2020) and Sylvania et al. (2022) have examined news diction, while Masthuroh (2020) and Guo (2023) have explored the cognitive processes behind metaphorical expression. However, there remains a significant gap in research applying Hart’s cognitive strategies to the specific cultural and ideological landscape of Indonesian mass media.

The Indonesian context offers a unique arena for investigation. Local cultural values and social hierarchies significantly influence how technology is adopted and viewed, meaning the way Indonesian media schematizes and frames AI likely differs from Western narratives. This study aims to fill this gap by investigating the use of AI metaphors in Indonesian mainstream media through the lens of CL-CDS. By analyzing the conceptual operations at play, this research seeks to provide scholars, media professionals, and policymakers with critical insights into how technological knowledge is communicated.

Understanding these mechanisms is crucial for developing communication strategies that demystify AI without succumbing to sensationalist or manipulative ideological framing. Therefore, this research focuses on the following central question: In what ways do Indonesian mass media utilize conceptual metaphors to represent AI, and how do these metaphors operate through the conceptual strategies of structural configuration, framing, identification, and positioning within the framework of Cognitive Linguistic-Critical Discourse Studies (CL-CDS)?

METHOD

This study employs a qualitative approach grounded in the CL-CDS framework. By synthesizing critical discourse analysis with cognitive linguistics, this method allows for a dual-layered examination: it investigates the linguistic structure of metaphors while simultaneously uncovering the cognitive processes and ideological power dynamics they instantiate. To capture the dominant public discourse in Indonesia, the study draws on data from six major national media outlets: *Kompas*, *Detik*, *Kumparan*, *CNBC Indonesia*, *ANTARA*, and *RRI*. These platforms were selected based on their extensive reach and diverse audience demographics, ensuring the data reflects a broad spectrum of societal perspectives.

The data collection focused on news reports, opinion pieces, and feature articles published between 2019 and 2024. A targeted search was conducted via Google News using the keyword phrase “Artificial Intelligence (AI),” resulting in a purposive selection of ten articles. Although limited in quantity, this sample was chosen for its conceptual richness rather than statistical breadth. The selected texts span diverse domains—including education, economy, ethics, and culture—providing a representative snapshot of the complex and often competing narratives surrounding AI in the Indonesian context. To ensure validity, the study employed source and theory triangulation, comparing metaphorical expressions across different outlets and aligning them with the analytical categories of the framework.

Data analysis was conducted using the four conceptual operating procedures outlined by Christopher Hart: *structural configuration*, *framing*, *identification*, and *positioning*. The process began by examining the structural configuration to understand how the basic scene of AI is schematically constructed. This was followed by an analysis of framing, which investigated how media contextualizes AI to influence audience impressions. The study then examined identification strategies to determine which actors are foregrounded in the discourse, and finally, positioning, to ascertain how the media situates AI relative to society and human agency. By strictly applying these procedures, this methodology elucidates not only the linguistic forms of metaphors but also the underlying ideologies shaping AI discourse in Indonesia.

RESULTS AND DISCUSSION

Results

Our analysis of Indonesian online media shows that the conceptualization of AI varies significantly. The discourse generally falls into three distinct metaphorical categories: (1) *AI as a human-like thinking machine*, (2) *AI as a decision-making machine*, and (3) *AI as a data-driven system*. These categories represent the competing narratives that currently define public understanding of technology in Indonesia.

By filtering these findings through the lens of Cognitive Linguistic-Critical Discourse Studies (CL-CDS), specifically applying Hart’s (2020) strategies of structural configuration, framing, identification, and positioning, this study dismantles the ideological work performed by these linguistic choices. The analysis exposes how each metaphor does more than describe AI; it actively constructs specific power relations between human agency and algorithmic authority.

Prior to a detailed analysis of each category, Table 1 summarizes how these three metaphors operate across the four conceptual dimensions of the CL-CDS framework.

Table 1. Summary of CL-CDS analysis of AI metaphors in Indonesian mass media

Metaphor Category	Structural Configuration	Framing	Identification	Positioning
1. AI as a human-like thinking machine	Structured as an entity with cognitive functions akin to the human mind; evokes “consciousness” and legitimizes machine rationality.	Framed positively as a smart partner or negatively as a threat to human cognition/employment.	Identified as a sentient-like being; implies an ideological shift toward transhumanism.	Positioned as an autonomous agent in competition with humans; shifts power to AI controllers.
2. AI as a decision-making machine	Conceptualized as an independent arbiter beyond mere execution; hierarchically placed above human judgment.	Framed as objective, rational, and superior to human bias; risks concealing inherent algorithmic bias.	Identified as a rational authority; promotes the ideology of technological governance (technocracy).	Positioned as an influential actor in policy; centralizes control among developers/corporations.
3. AI as a data-driven system	Described as a data-driven executor without autonomy; decisions are strictly contingent on input.	Framed as neutral and accurate; reinforces “data as truth” while neglecting potential data bias.	Identified with objectivity and purity; conceals the human role in curating the training data.	Positioned as dependent; real power resides with those controlling the data infrastructure.

The following sections deconstruct these metaphors in detail. By isolating the specific linguistic mechanisms at play, the analysis illustrates how these constructions reinforce or challenge existing ideologies within Indonesian society.

Conceptual Operation Strategies of the Metaphor “AI as a Human-like Thinking Machine”

The metaphor of “*AI as a human-like thinking machine*” fundamentally relies on a structural configuration that maps computational capabilities directly onto human cognitive functions. By drawing a parallel between AI systems and the human mind, the discourse conceptually elevates the technology from a mere automated tool to an entity capable of reasoning, interpreting, and making decisions. This configuration serves to legitimize the machine as a “rational” agent, thereby simplifying complex technological processes and inviting public acceptance. Even though the underlying mechanical processes of AI differ fundamentally from biological cognition, this metaphorical construction effectively reduces skepticism, encouraging society to view AI as a natural partner in tasks traditionally reserved for human thought, such as analysis and forecasting.

Building on this structural comparison, mass media framing typically oscillates between optimistic and cautionary narratives to contextualize the technology. On one spectrum, AI is framed as a “smart collaborator” or an extension of human intellect designed to enhance efficiency and eliminate error in sectors like healthcare and education. Conversely, a parallel frame depicts AI as a “rival” threatening to displace human roles and render employment obsolete. Despite their tonal differences, both frames reinforce a technocratic ideology by shifting the perceived locus of competence from people to machines. This selection of framing does not merely reflect current events but actively shapes public anxiety regarding who—or what—holds authority in the modern era.

In terms of identification, these discursive practices mark a distinct ontological shift in how the technology is viewed: AI transforms from a passive object into an active subject. The metaphor assigns traits such as intelligence, adaptability, and autonomy to the software, encouraging the public to perceive the machine as a sentient-like entity. This identification aligns with transhumanist narratives where technology is seen as transformative rather than just supportive. Consequently, as AI becomes identified as an “objective” and “intelligent” actor, its outputs are often afforded a higher degree of trust than human judgment, implicitly justifying the delegation of critical decision-making to algorithmic systems at the expense of human intuition.

Finally, the discourse positions AI as an autonomous agent that operates in parallel with, or even in competition against, human actors. By highlighting instances where systems outperform people in strategic data analysis or creative generation, the narrative establishes a hierarchy where machines are perceived to have surpassed human limits in specific domains. This positioning has significant implications for societal power dynamics, as authority becomes concentrated in the hands of the corporations and governments that control these “thinking agents.” Meanwhile, the general public is increasingly marginalized, creating a structure where access to and control over these technologies determine one’s standing in emerging social hierarchies.

Conceptual Operation Strategies of the Metaphor “AI as a Decision-Making Machine”

The metaphor of “*AI as a decision-making machine*” fundamentally restructures the concept of artificial intelligence from a passive instrument into an autonomous subject capable of independent action. In this configuration, AI is no longer portrayed merely as an executor of human commands but is elevated to the status of an agent that processes data and interprets complex patterns without continuous direction. By drawing a comparison to an ideal decision-maker, media discourse emphasizes attributes such as processing speed, accuracy, and consistency, often positioning the machine as superior to human cognitive limits. This structural view implicitly casts human judgment as fallible and inefficient, thereby creating a logical basis for delegating critical responsibilities—ranging from financial analysis to legal assessments—to automated systems.

Complementing this structural elevation, the framing of AI predominantly highlights its supposed rational and objective nature. Public narratives frequently present these systems as being free from the emotional influences, personal biases, and fatigue that plague human reasoning, suggesting that AI offers solutions that are inherently fairer and more consistent. While this framing promotes trust in sectors where impartiality is crucial, it often obscures the complexities of algorithmic bias. By presenting AI decisions as neutral, media outlets risk overlooking how human choices and systemic inequalities are embedded within the training data, ultimately shifting responsibility away from human oversight and placing disproportionate faith in the perceived objectivity of the machine.

In terms of identity construction, the metaphor identifies AI not merely as an advanced tool but as a new form of decision authority. It is assigned roles traditionally reserved for human expertise, such as interpreting evidence and issuing judgments, transforming it into a seemingly trustworthy source of guidance. This identification reinforces an ideology of technological governance, where decision-making is believed to be best outsourced to machines under the assumption that they are less flawed than their human counterparts. Consequently, this shift threatens to normalize the deferral to AI recommendations without sufficient scrutiny, potentially eroding the space for democratic debate and ethical reflection in institutional processes.

Finally, this discursive strategy positions AI in a commanding role within the broader decision-making infrastructure. Rather than functioning as a subordinate assistant, the technology is situated as a primary actor capable of shaping outcomes in high-stakes fields like security and governance. This positioning creates a significant power asymmetry, where authority concentrates in the hands of the corporations and governments that develop these systems, while ordinary citizens are increasingly relegated to the role of passive recipients. By establishing AI as a dominant force, the metaphor highlights and reinforces a structure where accountability becomes difficult to trace, and power is defined by access to sophisticated data processing capabilities.

Conceptual Operation Strategies of the Metaphor “AI as a data-driven system”

The structural configuration of this metaphor constructs a conceptual model in which artificial intelligence is predicated strictly on data input. Unlike previous metaphors that anthropomorphize AI as a thinking agent, this structure presents the technology as a mechanical processor that executes tasks solely based on the quality and quantity of information it receives. By emphasizing data as the essential “fuel” for decision-making, the discourse suggests that algorithms possess no inherent intelligence or agency beyond the computational rules derived from their datasets. While this configuration highlights the technical dependency of AI, it simultaneously serves to obscure the limitations of such reliance; it implies that the technology itself is neutral and that any flaws in output are merely reflections of

imperfect data, thereby subtly absolving the algorithmic system of responsibility while diverting focus from the human actors who curate the data and design the logic.

In public discourse, this structural dependency translates into a framing of AI as a neutral, precise, and objective instrument. Because the system operates on quantifiable inputs, media narratives frequently portray it as being free from the emotional interference or subjective fatigue that characterizes human labor. This framing highlights the capacity of AI to optimize performance and support evidence-based decisions in fields ranging from finance to scientific research. However, such a portrayal simplifies the complex reality of data-driven technologies by reinforcing the ideological assumption that “data equals truth.” This perspective often ignores the fact that data collection and interpretation are deeply embedded in social contexts, effectively marginalizing the need for human judgment and ethical scrutiny in favor of statistical efficiency.

Regarding identification, the metaphor aligns AI with the perceived purity and validity of the data itself. Media narratives encourage the identification of AI systems as generators of objective conclusions simply because they rely on empirical information. This construction fosters a high degree of trust in technological outputs while downplaying the mediating role of the programmers, analysts, and institutions that design these systems. By creating an image of AI as immune to bias—on the premise that it does not “think” like a person—the discourse fails to acknowledge that the selection of training data and algorithmic parameters are human decisions. Consequently, this identification supports a techno-centric ideology where computational logic is privileged over human deliberation, assuming that technological processes yield fairer results purely due to their statistical nature.

The positioning embedded in this metaphor places AI as subordinate to data, yet paradoxically elevates the status of those who manage the data infrastructure. Although the machine is viewed as operating objectively, the actual power to influence outcomes is shifted from visible decision-makers to the invisible actors who control data collection, processing, and application. Governments, corporations, and platforms gain significant strategic advantages as the gatekeepers of these information ecosystems. Meanwhile, the public is positioned as dependent on systems they neither design nor fully understand. This dynamic reinforces a growing asymmetry in technological society, where entities with access to large-scale data possess the leverage to shape markets, policies, and cultural values, leaving ordinary citizens with limited agency in the digital landscape.

The structured presentation of results above demonstrates the practical application of the CL-CDS framework, as proposed by Hart (2020). By dissecting each metaphor through the four conceptual operation strategies (structural configuration, framing, identification, and positioning) the analysis provides a comprehensive map of how language functions ideologically to shape public discourse on artificial intelligence. This combination of insights from cognitive linguistics and critical discourse analysis not only highlights the dominant metaphorical patterns in Indonesian media but also exposes the underlying power relations and ideological framings that sustain them. Ultimately, this systematic explication enhances the interpretive depth of the study, offering a coherent illustration of how metaphors actively construct perceptions and negotiate social meanings within media narratives.

Discussion

The analysis of Indonesian mass media discourse reveals that the use of metaphors regarding AI extends far beyond mere linguistic ornamentation; it plays a critical role in structuring public perception and cementing social power relations. The three dominant metaphors identified (*AI as a human-like thinking machine*, *AI as a decision-making machine*, and *AI as a data-driven system*) demonstrate distinct ways in which the media frames, identifies, and positions this technology within the public imagination.

First, the metaphor of “*AI as a human-like thinking machine*” constructs a cognitive bridge that allows the public to grasp abstract computational processes by mapping them onto the familiar territory of human cognition. Narratives describing AI as an “artificial brain” or a “thinking machine” evoke images of an entity capable of reasoning akin to a human being. Drawing on Lakoff and Johnson’s theory of conceptual metaphor (cited in Guo, 2023; Zhu, 2025), this mapping is not merely a rhetorical device but a fundamental cognitive framework that structures reality. By equating algorithmic processing with human thought, the media simplifies complex technology, making it accessible yet subtly misleading.

As noted by Zhai et al. (2020), this anthropomorphic framing elevates AI from a tool to a parallel intelligence. While this can foster enthusiasm for innovation in sectors like healthcare or education, it carries the risk of overestimating the system's autonomy. Mogi (2024) cautions that such personification unintentionally amplifies anxiety regarding the loss of human agency, even though current models lack consciousness. Ideologically, this metaphor serves a technocratic agenda: it validates the efficiency of machine-based reasoning over human judgment, implicitly justifying the displacement of labor. By suggesting that machines "think" more reliably than people, the discourse reinforces the economic interests of automation while consolidating power in the hands of the corporations controlling these technologies.

Second, the metaphor of "*AI as a decision-making machine*" shifts the focus from cognition to authority. Here, AI is positioned not just as an assistant, but as an autonomous agent entrusted with high-stakes responsibilities. Media coverage frequently frames AI as an engine of "precision" and "speed," constructing a narrative where automated systems are deemed superior for complex tasks such as legal judgment or financial analysis. Viewed through Hart's (2020) framing strategy, this representation constructs AI as a rational, emotionally detached observer—an ideal decision-maker free from human fatigue or bias.

However, this projection of objectivity is perilous. As Noble (2018) argues, algorithms are never truly neutral; they inherit the biases embedded in their training data and the assumptions of their developers. By framing AI as inherently impartial, the media obscures these structural inequalities. From a Critical Discourse Analysis (CDA) perspective, this metaphor reflects a shift in authority from collective human deliberation to technological governance. As public confidence is directed toward "objective" machines, accountability becomes harder to trace, and decision-making power concentrates among the technological elite who design the infrastructure, potentially reshaping the democratic balance of power.

Third, the metaphor "*AI as a data-driven system*" seemingly offers a more grounded perspective by emphasizing AI's dependency on input. This discourse identifies AI not as a conscious entity, but as a sophisticated processor of information. Through the strategy of identification (Hart, 2020), this metaphor affirms the technology's role in solving problems of scale that humans cannot handle. While this framing appears to demystify AI, it introduces a different ideological risk: the "datafication" of truth.

By emphasizing that AI works based on data, the narrative suggests that the outputs are factual and precise. However, this overlooks the politics of data control. As Zuboff (2019) argues in the context of surveillance capitalism, the control of data ecosystems creates a profound power imbalance. The entities that possess the data and the algorithms to process it gain the ability to manipulate decisions and behavior. Thus, while this metaphor strips AI of its "magic," it simultaneously legitimizes the power of data controllers, potentially suppressing individual privacy and agency under the guise of optimization and accuracy.

In summary, this study demonstrates that the integration of CL-CDS provides a robust framework for decoding the ideological work performed by metaphors in Indonesian media. By applying Hart's (2020) conceptual strategies—structural configuration, framing, identification, and positioning—the analysis reveals that these metaphors are not neutral descriptions. Whether portraying AI as a "thinking partner," a "superior decision-maker," or a "data processor," each metaphor acts as an ideological instrument. They collectively serve to validate specific technological pathways, normalize the transfer of authority from humans to machines, and perpetuate power asymmetries favoring the architects of these systems. Consequently, the CL-CDS framework functions here not just as a methodological guide, but as a critical lens exposing how language actively shapes the social and political reality of artificial intelligence.

CONCLUSION

This study concludes that the metaphorical construction of Artificial Intelligence in Indonesian mass media—specifically as a *human-like thinking machine*, a *decision-making machine*, and a *data-driven system*—functions as far more than a linguistic tool for simplification. Rather, these metaphors operate as ideological mechanisms that actively shape public perception and legitimize specific power dynamics. By framing AI as an autonomous, objective, and superior entity, the discourse normalizes the

displacement of human agency while simultaneously obscuring the control exerted by the architects of these technologies.

From the perspective of Critical Discourse Analysis, these findings reveal a clear technocratic ideology embedded in media narratives: one that promotes dependence on automated systems and reinforces the hegemony of the corporations and state institutions that control the data infrastructure. Consequently, this research offers critical insights for media practitioners, policymakers, and academics, highlighting the urgent need for a more reflexive approach to technological communication—one that acknowledges how language can inadvertently deepen social inequalities. To further expand this understanding, future research should extend the analysis to the volatile landscape of social media and investigate the broader ethical implications of how AI is framed in the public sphere.

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