

Jiang Jinzhang: Application of Artificial Intelligence in Media Organizations (Postprint)

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Date: 2023-10-08T00:00:00+00:00

Abstract

At the core of the data-driven production platform is content asset management. The “Media Cube” platform comprises a 6+1 architecture: planning, collection, editing, distribution, evaluation, operation, plus a large-screen visualization component. Correspondingly, it encompasses topic selection analysis, coordinated command dispatch, integrated production and creation, data resource fusion, communication effect analysis, and user asset operation platforms—the foundational prerequisites for a co...

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Introduction: Data-Driven Media Production Platforms

At the core of the data-driven production platform is content asset management. The “Media Cube” platform comprises a 6+1 architecture: planning, collection, editing, distribution, evaluation, operation, plus a large-screen visualization component. Correspondingly, it encompasses topic selection analysis, coordinated command dispatch, integrated production and creation, data resource fusion, communication effect analysis, and user asset operation platforms—the foundational prerequisites for a comprehensive large-screen visualization platform. The data resource fusion platform facilitates the transformation from database resources to knowledge base resources. On the user asset operation platform, Media Cube integrates user resources from various ports through embedded codes, aggregating user behavior to achieve user accumulation and concentration. The large-screen visualization center operates 24/7, displaying real-time information on public opinion, trending topics, and manuscript approvals. Without a local data center and data accumulation, future big data analysis would be mere talk.

TRS Company has launched a media big data cloud service supported by knowledge bases including media knowledge bases, domain knowledge bases, regional

knowledge bases, and emergency event knowledge bases. This service excavates data value while conducting multi-level data analysis, providing intelligent big data + AI services for media organizations. The topic selection and planning analysis platform transforms public opinion big data into media big data, converting data-driven thinking into business intelligence. Data dimensions encompass not only hotspot analysis but also influencers, key dissemination nodes, trending terms, related individuals, institutions, and perspectives from various media organizations, offering editors and journalists rich data resources. The communication effect analysis platform incorporates three dimensions—internet reposting, interaction, and reading indices—to continuously optimize the accuracy of communication power metrics. The coordination and command dispatch platform encompasses journalist dispatch, task distribution, and full-process monitoring, enabling one-click access to real-time manuscript publication status across multiple terminals on Zhejiang Daily's large-screen visualization platform.

AI 2.0 Era Perspectives

Lin Songtao stated that big data + AI supports the media technology platform's entry into the 2.0 era. He emphasized that, according to AI pioneer Fei-Fei Li, reviewing the past two decades of AI development—particularly in key subfields such as machine learning, natural language processing, and computer vision—reveals that internet-based data has become an increasingly powerful driving force for artificial intelligence.

Jiang Jinzhang: AI Applications in Media Organizations

Core Thesis: From Content to Behavior Supplier

“When technology has already become decisive, many people are still talking about ‘content is king’ or ‘marketing is king,’ but we need to understand that none of these can be ‘king’ anymore.”

—Jiang Jinzhang, Professor and Doctoral Supervisor, School of Media and Design, Shanghai Jiao Tong University

The essence of media is no longer that of a content supplier, but rather a supplier of media behaviors. When people worldwide can supply content, we must instead supply behavior. Data drives behavior, not merely content—data constitutes knowledge, and knowledge generates behavior. This represents a fundamental human requirement and constitutes a significant disruption for many media organizations.

Across different eras, humanity has exhibited distinct social behaviors. In the agricultural age, humans obtained basic livelihood resources from nature; in the industrial age, people operated machines for social activities; in the internet age, we witness interactive behavior among humans, machines, society, and

data. Consequently, communication behavior unfolds within these four interactive dimensions. Content itself is data—a form of symbolic cognition—and media must provide intelligent behavioral services that anticipate what people wish to obtain and disseminate.

Artificial intelligence extends and enhances human intelligence rather than creating machine intelligence that surpasses humans. Its essence lies in augmenting human society with machine intelligence. As we enter the quantum era, technology will decisively shape social interaction, ushering in unprecedented technological advances. Many current technologies will undergo disruptive updates, particularly with 50-qubit quantum computing processors expected to enter commercial use within three years.

Four Definitions of AI

First, broadly speaking, artificial intelligence is about the intelligent behavior of artifacts. Second, narrowly defined, “artificial intelligence” is merely an intelligent machine that reacts. Third, AI is a capability enabling an entity to appropriately and foresightedly achieve required functions within its environment. Fourth, it is an activity that must be integrated into all our communication activities—intelligence realized on machines through artificial methods, or the endeavor to imbue machines with human-like intelligence, thereby enabling appropriately foresighted execution of functions through software and hardware integration.

Two Latest Developments in AI

First, logic-based models are yielding to data-driven approaches. With the advent of the internet and big data eras, future artificial intelligence will be primarily data-driven—that is, after computationalizing matter to construct determinism, this pathway will bring new breakthroughs. Second, the one-way approach of having machines learn from the human brain is shifting toward humans also needing to develop and learn machine intelligence (reverse engineering), ultimately achieving mutual learning and co-development. Many organizations today are not tasked with developing AI technology itself, but rather with moving from this one-way machine learning to humans learning machine intelligence. Therefore, when a project enters this domain, we must relearn how AI works, then ultimately achieve mutual learning and joint development. While many fear AI, it is actually simpler than the human brain, always representing a singular, specialized depth. Consequently, we can envision three types of beings coexisting on Earth: natural humans, robots, and alien intelligences (heterogeneous intelligence). This heterogeneous intelligence opens a new direction: future AI need not imitate the human brain but can develop independently through data-driven approaches, forming new AI genes. It does not necessarily require comprehensive imitation of human consciousness—this represents a major breakthrough in AI and the source of fear regarding superintelligence, as it will no longer be merely a replica of the human brain.

Five Characteristics of AI

First, the transition from manual knowledge expression to big data-driven knowledge learning technology. Every media organization requires a sensing department and a knowledge department that learns continuously—this constitutes the primary process. Therefore, organizations need search or knowledge management departments that must sense all knowledge within their professional fields, establishing connections with global knowledge and reflecting others' behavior in real-time through sensing methods. In this context, enabling audiences to directly reflect others' behavior represents a major media breakthrough.

Second, the shift from classified multimedia data processing to cross-media cognition, learning, and reasoning. Here, “media” refers not merely to news media but to interfaces or environments. Specifically: first, whether the media company's environment is an AI environment; second, whether its interface is globally oriented; and third, whether it integrates global resources for global sales. In this era, all economies of scale will rapidly collapse, giving way to economies of scope. Any customer must be global, and interfaces must form globally to align with modern business models.

Third, the transition from pursuing intelligent machines to high-level human-machine and brain-machine collaboration and fusion. Independent human thinking has reached its end; without networking and proximity to AI, all future thinking will become obsolete.

Fourth, the shift from focusing on individual intelligence to group intelligence based on the internet and big data. Currently, society has entered an era of social innovation—all talent and individual cognition will eventually become obsolete. The new era necessarily entails group cognition, requiring contemporary media to create new human behaviors on a global scale to achieve unprecedented development.

Fifth, the transition from anthropomorphic robots to broader intelligent autonomous systems, such as smart factories and intelligent drone systems. If our unmanned systems and intelligent production systems remain incomplete, media organizations will have no competitive position in future media landscapes.

Three Stages of the Internet Era

The first stage is the online phase, where 80% of people in 20 industrial countries are online, necessitating a shift from parallel production to interactive production. Technology companies must interact and build collaborative production platforms where products are co-created. Consequently, some technology companies must establish strategic alliances with media companies, participating throughout the entire media production process rather than merely providing technical equipment. If technology companies continue merely supplying technical products rather than comprehensively participating in all production processes through a sharing economy model, their future will be concerning.

The second stage is big data, involving the computationalization of matter to construct determinism. Therefore, each media company must become a responder to social behaviors, identifying which professional behaviors can generate market value—this becomes the media company’s mission, which is no longer merely news reporting or content production.

The third stage is artificial intelligence, concerning the intelligent behavior of artifacts that will ultimately automate all human behaviors. This requires every media company to prepare for its own automation.

Six Judgments on AI

1. Advances in AI technology and related fields provide new market opportunities for core domains.
2. Machines have surpassed humans in performing specific intelligence-related tasks. Rapid development in specific AI fields will continue in the coming years.
3. Although AI cannot completely replace humans within the next two decades, it will surpass humans in an increasing number of tasks. Current AI represents the intensification of any single function within human consciousness, and this single-function intensification will outperform humans when executing specific tasks.
4. Accelerating AI capability development will ultimately automate human tasks. In the future, human unemployment rates will first rise then fall, just as early computerization caused panic but ultimately increased global employment by 33% upon widespread adoption.
5. We will pay a temporary price as people adapt to AI’s existence and learn to work alongside it.
6. The future will be an era where we work alongside AI and AI lives alongside us. Humans will be embedded within AI system workflows rather than working on systems, while human life will have AI embedded within it—a complete disruption of our work and life.

Seven Essential Elements of Human Intelligence

The seven essential elements of human intelligence include: the ability to interact with the external world, reasoning capability, planning ability, autonomous learning capacity, adaptability, emergency handling capability, and creativity. We hope all media organizations will comprehensively internet-ize these seven capabilities. First, regarding interaction with the external world, organizations must install all image recognition and sensing systems to rapidly enter society at large, directly reflecting human life and behavior through machines. Second, the statistical methods of AI mimicking and inferring human capabilities should be learned by everyone. Third, we must maximize the achievement of competitively determined goals by planning comprehensive technology adoption for the next ten to twenty years. Fourth, media integration is not about self-integration but integration with society—media must reflect the entire society. Therefore,

although each media organization has different specialized fields, it must also reflect society to reduce social risks. Fifth, autonomous learning includes unsupervised learning, supervised learning, and reinforcement learning—all driven by big data. Since big data is built upon human knowledge, it is crucial for every media organization to access global knowledge bases. They need not own them but must connect to them, as connections enable data to function within knowledge bases. Consequently, media reporting and responsiveness will be determined by learning capabilities, shaping your media products and services. Sixth, concerning adaptability: just as a person changes posture when uncomfortable in a chair, if future media can make such adjustments in all hospitals and healthcare facilities, they will enter the realm of human health and wellness, becoming health media. Thus, each media organization will have its own professional vertical. Seventh, whereas we previously created independently, we must now create together with AI. Past collaboration was human-to-human; future collaboration must be human-to-machine. The innovation era represents disruption, not simple integration—it is reconstruction, not merely “Internet+”.

Eight Strategies for Media Organizations to Respond to AI

First, work alongside artificial intelligence—no thinking without AI, no working without AI, no action without AI. Transition from “light media” to “heavy media.” Every media company must establish technology as its foundation. Marshall McLuhan’s era has arrived—technology is the message. Without a technological foundation, one can no longer qualify as a media company, just as news in the past could not become media without editing and printing technologies.

Second, recognize that media supplies behavior, not content. In the future, supplying content alone will be inadequate; the key lies in supplying user behavior.

Third, dismantle existing organizational structures and rapidly establish technology-oriented internet organizations with interactive production systems. Media organizations must swiftly build technology-oriented internet organizations, as only interactive production systems can achieve three major transformations: the sharing economy, social collaborative innovation, and crowdsourced cooperation. Without organizing these three business models together, complete bankruptcy will occur within the next decade.

Fourth, all business must be built upon a new social production system: technology, capital, talent, institutions, and behavioral standards. All management must prioritize what technology to use for product realization. Capital is continuously supplied throughout the product creation process—human production is like swimming; without water, one cannot swim. Therefore, capital is the water of all economic activities. In market economies, price is always the final negotiation; technology must take priority. Thus, talent, institutions, and behavioral standards collectively construct any project or product, and without any one factor, sustainable operation becomes impossible.

Fifth, continuously enhance employees' AI literacy and skills by integrating education and training, business objectives, work requirements, products and services, customers, and personal income into a single intelligent cloud platform.

Sixth, establish virtual teams for creativity, innovation, and entrepreneurship, integrating global resources to serve global customers and operating within fluid spaces.

Seventh, focus not on content segmentation but on behavior segmentation, establishing platform behavior awareness, implementing collaborative crowdsourcing strategies, and building AI work environments.

Nine Communication Behaviors in AI Research Fields

1. Machine Learning: Media must become learning organizations that establish their own knowledge systems and connect with world knowledge. When establishing any concept, can you inform users how all disciplines understand this concept? Can all global databases enter your search scope with significant indexing? For instance, when IBM announces quantum-related information, can you rapidly display all global quantum technology applications? This connection capability is paramount.

2. Robotics: Train robots to interact with the surrounding world in a general-purpose, predictive manner. News reporting must move toward deep analysis and event prediction. News reporting should no longer merely describe event development processes; more importantly, it must provide deep analysis and event forecasting. Media organizations must build systems capable of exchanging energy with their environment, rather than focusing on the system itself.

3. Computer Vision: As the primary form of machine perception, media organizations must establish connections with urban monitoring sensors, moving beyond singular interviews to sensing and big data management.

4. Natural Language Processing: This field is shifting toward developing systems that can interact with humans through conversation rather than fixed-format requests. We hope all media interfaces and cross-platform systems can translate seamlessly, with voice, semantics, and syntax aligned.

5. Collaborative Systems: Research on models and algorithms helps develop autonomous systems that can collaborate with other systems and humans. All future products must be models and algorithms, as only they can fully integrate content and behavior.

6. Crowdsourcing and Human Computation: Building global systems enables global resource supply and global product sales.

7. Algorithmic Game Theory and Computational Social Choice: For example, advertising should target behavior rather than content. In new variety shows, advertisements appear in actors' performance behaviors rather than being implanted in content.

8. Internet of Things: A series of devices—including home appliances, automobiles, buildings, cameras, and other objects—can interconnect to collect and share perceptual information. Media organizations must construct various physical sensors to dynamically and instantly capture social phenomena. IoT is not logistics; it is true big data representing active interactions among human-machine, human-object, and object-object behaviors.

9. Neuromorphic Computing: A set of technologies that simulate biological neural networks to improve hardware efficiency and overall system stability. Media organizations must establish automatic knowledge acquisition scopes, with machines automatically analyzing and forming behavioral standard patterns.

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv — Machine translation. Verify with original.