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Exploring the Application of Blockchain and Knowledge Graph Technologies for Post-Print New Media Reporting on the 100th Anniversary of the Founding of the Communist Party of China

Authors: Guannan Hao, Li Can, Liu Xinghong

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Abstract

In 2021, the centennial of the Communist Party of China' s founding, we empowered content reporting through technological innovation, actively explored the application of emerging technologies such as blockchain and knowledge graphs, integrated H5 news reporting formats, and devised three categories of reporting solutions distinguished by robust interactivity, compelling impact, and creative innovation, thereby contributing to new media coverage of the centennial commemoration.

Full Text

Exploring the Application of Blockchain and Knowledge Graph Technologies to Enhance New Media Reporting for the 100th Anniversary of the Founding of the Communist Party of China

Hao Guannan, Li Can, Liu Xinghong
(People' s Daily Technology Department, Beijing 100026)

Abstract: 2021 marks the 100th anniversary of the founding of the Communist Party of China. To commemorate this milestone, we have empowered content reporting through technological innovation by actively exploring new technologies such as blockchain and knowledge graphs, integrated with H5 news reporting formats. This approach has yielded three types of reporting proposals characterized by strong interactivity, powerful emotional resonance, and creative novelty, thereby enhancing new media coverage for the centennial celebration.

Keywords: blockchain; knowledge graph; 100th anniversary of the Party' s founding; new media

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Introduction

The year 2021 marks the centennial of the Communist Party of China—a momentous occasion commemorating a century of extraordinary achievements. On March 23, the Central Committee of the Communist Party of China held a press conference outlining eight major celebratory activities, including Party history education for all members, awarding the "July 1 Medal" and "50-Year Party Membership Commemorative Medal," and creating a series of literary and artistic works and publications [1]. At this historically significant juncture, planning comprehensive media works that resonate with audiences, inspire patriotism, and embody creative innovation has become a focal point for mainstream media outlets. We have sought to empower content reporting through technological innovation by actively exploring emerging technologies such as blockchain and knowledge graphs, integrated with H5 news reporting formats. Building upon the Central Committee and People' s Daily' s arrangements for centennial coverage, we have developed major reporting proposals to honor the Party' s 100th anniversary.

H5 productions offer unique advantages including excellent user experience, strong interactivity, and powerful dissemination, establishing them as a mainstream communication vehicle favored by audiences. During the 2017 coverage of the 90th anniversary of the founding of the People' s Liberation Army, People' s Daily released the viral H5 work *Look! This Is My Military Uniform Photo*, which leveraged facial recognition and image fusion technologies to display military uniforms from 1927 to 2017. Users could upload their photos to generate personalized military uniform portraits through facial recognition. The work achieved widespread dissemination immediately upon release, accumulating over 1 billion views [2] and winning the first prize of the 28th China News Award, becoming a model work in converged media journalism.

Blockchain technology' s key characteristics—decentralization, immutability, transparency, and traceability—offer significant advantages for copyright protection, rights confirmation, and infringement protection in media industry news products. It is gradually being applied in content production payment,

digital asset management, and precision advertising placement and statistics, serving as a valuable asset on the path of media convergence transformation and upgrading. Blockchain + media will become a new trend in the future development of the media industry.

Knowledge graph technology represents a major development branch of artificial intelligence transitioning from "perception" to "cognition." Its essence is a structured semantic network knowledge base that expresses facts through triples of "entity-relationship-entity" or "entity-attribute-value," enabling rapid knowledge response. Currently, it has covered multiple application areas such as "intelligent Q&A," "intelligent retrieval," and "personalized recommendation," and is accelerating its penetration into various industries. For the media industry, knowledge graph technology will also positively impact enriching reporting forms and storing and managing massive media asset data.

For this centennial celebration, we plan to build upon the H5 communication format while innovatively integrating voice blockchain technology. In collaboration with Tencent, we aim to create a new media H5 project titled *Review the Party Oath and Share Your Party Tenure*. Users will input their year of joining the Party, record their personal oath, and receive an exclusive blockchain certificate for their Party oath voice recording. This blockchain certificate is immutable, transparent, and traceable, and will be automatically generated in the form of a People' s Daily extra edition e-newspaper. Users can share screenshots of the H5 page while possessing exclusive personal copyright.

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1. Interactive H5 Reporting Based on Voice Blockchain Technology

H5 works offer unique advantages including excellent user experience, strong interactivity, and powerful dissemination, establishing them as a mainstream communication vehicle favored by audiences. During the 2017 coverage of the 90th anniversary of the founding of the People' s Liberation Army, People' s Daily released the viral H5 work *Look! This Is My Military Uniform Photo*, which leveraged facial recognition and image fusion technologies to display military uniforms from 1927 to 2017. Users could upload their photos to generate personalized military uniform portraits through facial recognition. The work achieved widespread dissemination immediately upon release, accumulating over 1 billion views [2] and winning the first prize of the 28th China News Award, becoming a model work in converged media journalism.

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[Figure 1: see original paper] Voice Blockchain H5 Reporting Proposal Display

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2. Dynamic Short Video H5 Reporting Based on Face Fusion Technology

The reporting format of uploading photos to "swap faces" and create various themed images on H5 pages has produced many viral works in the early stages. However, as facial recognition and face fusion technologies have matured, the technological innovation appears somewhat insufficient and fails to deliver a refreshing experience. For this centennial celebration, we plan to innovatively adopt a face fusion short video solution, combined with blockchain technology, to provide users with a highly interactive, immersive experience featuring their faces dynamically displayed in important historical scenes.

After users upload their photos, the system will automatically generate short videos by dynamically integrating their faces into fixed historical scenes based on facial recognition and face fusion technology. Users can declare personal copyright on the H5 page, and the system will conduct blockchain deduplication comparison. After dynamic fusion is completed, the short video will be uploaded to the blockchain for storage and verification, and a blockchain certificate will be returned. Users can share the H5 page link while possessing exclusive personal copyright certification.

We plan to adopt a "three-step" strategy for deploying Party history knowledge graph construction. The first stage involves Party history + comprehensive graph construction, aiming to complete automatic extraction and processing of Party history materials and the construction of the Party history knowledge graph. The second stage involves Party history + newspaper historical content + comprehensive graph construction, aiming to continuously improve the maturity of the knowledge graph platform and build a knowledge graph system with People' s Daily characteristics by incorporating relevant historical page data, images, text, and audio-visual materials. The third stage involves specific business hypothesis verification + thematic graphs, aiming to build highly targeted and professional knowledge graph systems for specific business needs that can serve as demonstrative models.

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3. Party History Learning H5 Reporting Based on Knowledge Graphs

The Party history learning H5 reporting proposal based on knowledge graphs aims to leverage this new technology to innovate reporting forms, celebrating and paying tribute to the Communist Party of China' s great century-long journey, while enhancing public recognition of the Party' s monumental achievements.

This proposal will utilize 3D visualization technology to present the Party history knowledge graph in a three-dimensional format on H5 pages. The vertical axis represents the centennial timeline from 1921 to 2021, while the horizontal axis is divided into dimensions such as people, locations, major events, and relevant People' s Daily reports related to Party history. Each node in the graph network represents significant historical events occurring in corresponding years within each dimension. The unique People' s Daily dimension embeds the newspaper' s historical coverage of major Party events. By conducting knowledge modeling of events within nodes, we extract essential information for the Party history knowledge graph from both structured and unstructured data. Through model calculation, rule strategies, and event logic, we normalize relevant Party history knowledge and ultimately display it in graph form on the H5 page. With simple page scrolling, users can enjoy a three-dimensional immersive experience as if walking through the century-long history from the Party' s founding to its 100th anniversary. Clicking on corresponding nodes reveals detailed information about figures, locations, and events, while simultaneously displaying nodes of related events for further user exploration, thereby forming a Party history knowledge graph that enhances learning enthusiasm among Party members and clarifies Party history knowledge frameworks.

[Figure 2: see original paper] Party History Knowledge Graph H5 Reporting Proposal Display

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Media convergence development represents a media transformation led by technological innovation, with new technologies serving as the engine propelling the development of "four-all media." In planning reporting proposals for the centennial celebration activities, we have empowered content reporting through technological innovation by actively exploring blockchain and knowledge graph technologies, integrated with H5 news reporting formats. We have proposed three types of reporting proposals with strong interactivity, powerful impact, and creative novelty to enhance the newspaper' s new media coverage. Moving forward, we will proceed according to the design concepts of these reporting proposals, collaborating with Tencent' s design team to implement these plans. We aim to actively create vivid cases of innovative applications of blockchain and knowledge graph technologies in the field of media convergence, striving to produce viral new media works with broad dissemination, significant impact, and creative excellence.

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Author Biographies:
Hao Guannan (1981-), male, from Xinji, Hebei, Director of Convergence Support Division, Technology Department;
Li Can (1992-), female, from Dongming, Shandong, Engineer at Convergence Support Division, Technology Department;
Liu Xinghong (1985-), male, from Changting, Fujian, Engineer at Convergence Support Division, Technology Department.

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

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