

Patent analysis of Automated Content Tag Processing for Mobile Media - US20190354552A1

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ABSTRACT

Purpose: *To understand the technological innovation, operational mechanisms, and commercial significance of the patent titled “Automated Content Tag Processing for Mobile Media” (US20190354552A1). The study evaluates how automated content processing, artificial intelligence, machine learning, metadata generation, and mobile media technologies are integrated to identify content features, generate relevant tags, and improve digital media organisation and retrieval. It further aims to assess the patent's business value, practical applications, future opportunities, and strategic relevance through structured patent analysis frameworks such as SWOC and ABCDEF.*

Methodology: *This study adopts an exploratory qualitative research approach to systematically collect, organise, and analyse information related to the selected patent from sources such as Google Search, Google Patents, Google Scholar, and AI-assisted platforms. The collected data were interpreted using SWOC and ABCDEF analytical frameworks to evaluate the patent's technological, strategic, operational, and commercial significance.*

Results & Analysis: *The analysis reveals that the patent integrates automated content analysis, machine learning, metadata processing, and mobile media technologies to generate content tags and support efficient digital media management. The study found that the invention offers technological and operational advantages by reducing manual tagging efforts, improving content organisation, supporting faster search and retrieval, and enhancing content discovery. The SWOC and ABCDEF analyses further indicate that the patent possesses innovation potential, scalability, market relevance, and future commercialization opportunities despite challenges related to tagging accuracy, data privacy, system integration, and technological competition.*

Originality & Values: *This study is original in applying a structured patent-analysis approach using SWOC and ABCDEF frameworks to evaluate the technological, operational, and commercial significance of Patent US20190354552A1. The article provides valuable insights into how automated content tagging, artificial intelligence, and mobile media technologies can transform traditional digital content-management processes into intelligent and scalable solutions. The study also offers practical value for researchers, innovators, technology companies, digital-content managers, and platform developers by highlighting the patent's innovation potential, business opportunities, and future development prospects.*

Type of Paper: *Review-based Exploratory Research.*

Keywords: Patent Analysis, Automated Content Tagging, Mobile Media, Content Processing, Metadata Management, SWOC Analysis, ABCDEF Analysis, Patent Number: US20190354552A1.

1. INTRODUCTION :

1.1 About Patent Analysis:

Patent analysis has emerged as an important scholarly research approach for examining technological innovations, intellectual property developments, and emerging business opportunities (Archibugi (1992). [1]; (Abbas et al. (2014). [2])). Unlike traditional case studies that focus on organizations or

industries, patent analysis systematically investigates patented inventions to understand their technological foundations, novelty, utility, and potential contributions to society. Patent documents contain unique technical knowledge that is often unavailable in other scholarly sources, making them valuable resources for exploratory research and innovation studies. Patent-based research also assists scholars in identifying technological trends, forecasting future innovations, and understanding the evolution of knowledge in specific domains (Daim et al., (2006). [5]; (Erdi et al., (2013). [6]). The concept of patent analysis as a scholarly research method has been proposed as a structured qualitative research technique that can generate new interpretations and insights from existing patented knowledge (Abbas et al. (2014). [2]).

A patent represents a legally protected invention that offers a novel solution to a technical problem through a product, process, system, or technological improvement. Every patent follows a standardized structure consisting of a title, abstract, specification, detailed description, drawings, claims, and citations, which collectively describe the invention and its intended applications. These components provide a rich source of information for researchers to evaluate the technical feasibility, innovativeness, and commercial potential of inventions. Patent documents are increasingly recognized as valuable datasets for technological intelligence, innovation management, and competitive analysis because they reveal both current technological capabilities and future directions of research and development (Griliches (1990). [3]; Hall et al. (2001). [4]; Wang et al. (2018). [8]). Consequently, the systematic examination of patent structures offers significant opportunities for scholarly inquiry and knowledge creation.

The societal impact of patents extends beyond legal protection and commercial exploitation. Patented technologies contribute to economic development, industrial growth, productivity enhancement, healthcare advancement, environmental sustainability, and improved quality of life. Patent analysis enables researchers to assess how inventions influence technological ecosystems, create business opportunities, and address societal challenges. Studies have shown that patent data can be utilized to monitor technology trends, identify emerging opportunities, evaluate technological impacts, and estimate future industrial potential (Altuntas et al. (2015). [7]; (Ogawa & Kajikawa (2015). [15]). Through systematic investigation, researchers can determine the broader implications of inventions for stakeholders such as consumers, industries, governments, investors, and society at large, thereby enhancing the practical relevance of scholarly research (van Rijn & Timmis, (2023). [14]).

Patent analysis is particularly suitable as an exploratory research method because it facilitates the discovery of new knowledge, interpretations, and future possibilities. Exploratory research aims to investigate phenomena, identify patterns, and generate insights that may lead to theory development or innovation (Stebbins, (2001). [16]; Piovesan & Temporini (1995). [17]). Patent analysis supports these objectives by enabling scholars to study the technological features, claims, innovation opportunities, competitive advantages, and future value of patented inventions (Abbas et al. (2014). [2]); (Arts et al. (2021). [10]). Furthermore, patents serve as indicators of technological strength, innovation capability, and research productivity within organizations and industries (Archibugi (1992). [1]; Griliches (1990). [3]). By integrating qualitative analytical frameworks such as SWOC and ABCDEF analysis, researchers can evaluate patents from multiple stakeholder perspectives and derive meaningful conclusions regarding their strategic significance.

The structure of a patent-analysis-based scholarly article generally follows a systematic sequence beginning with the identification and selection of a patent, followed by the study of its abstract, classification, description, drawings, claims, citations, legal status, and technological features. The analysis then extends to evaluating innovation potential, business value, societal implications, opportunities, challenges, and future prospects using suitable analytical frameworks (Lin & Chou (2025). [12]; Mittal (2010). [18]). The present research adopts an exploratory research methodology to investigate an identified patent comprehensively and to interpret its technological, commercial, and societal significance. By combining patent structure analysis with innovation and impact assessment, the study aims to demonstrate how patent analysis can serve as an effective scholarly research method for generating new insights and contributing to the advancement of knowledge in technology, management, and innovation studies.

1.2 In This Paper:

This scholarly article is structured as a comprehensive patent-analysis-based research case study of the patent titled “Automated Content Tag Processing for Mobile Media.” The study begins with a review-based selection of related patents in the field of artificial intelligence, automated content processing, mobile media, and digital content management, followed by an examination of the selected patent’s basic details, technical content, invention objectives, operational mechanisms, claims, citations, and similar inventions. The article systematically investigates how automated content analysis, artificial intelligence, machine learning, metadata generation, and mobile media technologies are integrated to identify content features, generate relevant tags, and improve the organization and retrieval of digital media. The patent is analysed from technological, business, and societal perspectives to understand its innovation potential, practical applicability, and contribution to digital transformation in the media and content-management industry.

The analytical component of the article adopts an exploratory research methodology and applies multiple patent-analysis frameworks, including technical analysis, innovation analysis, patent value analysis, SWOC analysis, and ABCDEF stakeholder analysis. Particular emphasis is given to evaluating the patent’s strengths, weaknesses, opportunities, challenges, advantages, benefits, constraints, disadvantages, effectiveness, and future financial value. Based on the patent description and technical features, the analysis focuses on the automated processing of mobile media, identification of content characteristics, generation of descriptive tags, and association of metadata to support efficient digital media management. The study further examines business opportunities, market value, implementation challenges, and future commercialization prospects of the invention, thereby providing a holistic assessment of the patent’s technological significance and its potential impact on digital platforms, content creators, media organizations, advertisers, and consumers.

2. REVIEW-BASED SELECTION OF SOME PATENTS IN AUTOMATED CONTENT TAG PROCESSING FOR MOBILE MEDIA :

Some of the important patents related to Automated content tag processing for mobile media are searched using <https://patents.google.com/> and reviewed in Table 1.

Table 1: Some Important Patents Related to Automated Content Tag Processing for Mobile Media

S. No.	Patent Number & Date of Award	Patent Title	Inventor	Patent Status	Patent Type & Reference
1	US20190354552A1	Automated content tag processing for mobile media	Kavi Maharajh Bart MacNeil Torin Walker	Active	Utility Patent [19]
2	US10878020B2	Automated Extraction Tools and Their Use in Social Content Tagging Systems	Nikhil Pai	Active	Utility Patent [20]
3	US9330171B1	Video Annotation Using Deep Network Architectures	Sanketh Shetty Andrej Karpathy George Dan Toderici	Active	Utility Patent [21]
4	US8392957B2	Automatic content tagging, such as tagging digital images via a wireless cellular network using metadata and facial recognition	Adam Holt Winston Wang	Active	Utility Patent Application [22]

5	US8520909B2	Automatic and Semi-Automatic Image Classification, Annotation and Tagging Through the Use of Image Acquisition Parameters and Metadata	Clement Ho Cheung Leung Chun Fan Wong Jiming Liu	Active	Utility Patent Application [23]
6	US11995034B2	Hierarchical Tags with Community-Based Ratings	James M. Barton Brian Beach David Platt Kevin Smith Michael Klar Paul Stevens David Chamberlin Richard Lee	Active	Utility Patent [24]
7	US20110075851A1	Automatic Labeling and Control of Audio Algorithms	Jay LeBoeuf Stephen Pope	Active	Utility Patent Application [25]
8	US8189880B2	Interactive Photo Annotation Based on Face Clustering	Fang Wen Rong Xiao Qiong Yang Xiaou Tang	Active	Utility Patent [26]
9	US10157333B1	Systems and methods for content tagging	Xiaoyu Wang Ning Xu Ning Zhang Vitor R. Carvalho Jia Li	Active	Utility Patent [27]
10	US20150242706A1	Classifying and annotating images based on user context	Stephen J. Brown	Expired - Fee Related	Utility Patent Application [28]

3. OBJECTIVES OF THE STUDY :

- (1) To review and analyse selected patents related to automated content tagging, metadata processing, image and video annotation, and mobile media technologies in order to identify technological evolution, innovation trends, and the positioning of Patent US20190354552A1 within the existing patent landscape.
- (2) To examine the technical architecture, operational methodology, and innovative features of Patent US20190354552A1, focusing on automated content tag processing, metadata generation, content classification, mobile media management, and digital content organization.
- (3) To evaluate the detailed description, claims, and novelty of the invention in order to understand its uniqueness, technological contributions, patentability, and potential advantages over existing solutions and prior art.
- (4) To investigate the technological, operational, and commercial significance of the patented system by analysing its effectiveness in improving content tagging, metadata management, media classification, content discovery, search, and user access to digital media.
- (5) To conduct a comprehensive structural analysis of the patent using SWOC and ABCDEF frameworks, thereby identifying its strengths, weaknesses, opportunities, challenges, advantages, benefits, constraints, disadvantages, effectiveness, and future financial value from multiple stakeholder perspectives.

(6) To assess the business opportunities, market potential, implementation challenges, and future commercialization prospects of the invention, and to provide strategic suggestions for enhancing its adoption, scalability, and long-term value in AI-enabled digital media and content management industries.

4. METHODOLOGY :

This study adopts an exploratory qualitative research approach to systematically examine and interpret information related to the selected patent, **US20190354552A1, Automated Content Tag Processing for Mobile Media**. Relevant data were gathered through keyword-based searches from publicly accessible sources, including Google Search, Google Patents, Google Scholar, and AI-assisted GPT platforms. The collected information was carefully organized, classified, and analysed in accordance with the objectives of the study.

The study focuses on understanding the patent's technical features, automated content tagging processes, metadata generation, media classification, and mobile content management capabilities. To facilitate a comprehensive and structured assessment, analytical frameworks such as SWOC (Strengths, Weaknesses, Opportunities, and Challenges) and ABCD/ABCDEF (Advantages, Benefits, Constraints, Disadvantages, Effectiveness, and Future Financial Value) were employed. These frameworks were used to examine the technological innovation, operational significance, business potential, market opportunities, implementation challenges, and future commercialization prospects of the patented system (Aithal (2017); Aithal & Aithal (2019). [29]).

This methodology enables a systematic evaluation of the selected patent and helps identify its contribution to AI-enabled digital media processing, automated content organization, content discovery, and mobile media management.

5. BASIC DETAILS OF PATENT CHOSEN FOR ANALYSIS :

5.1 Patent Overview:

The patent selected for analysis is US20190354552A1, titled “Automated Content Tag Processing for Mobile Media.” The invention belongs to the fields of Artificial Intelligence (AI), Machine Learning (ML), Multimedia Processing, Content Management, Metadata Generation, and Information Retrieval. The patent introduces an automated system for processing digital media content and generating relevant tags or metadata. The technology is designed to reduce manual content-labelling activities and improve the organization, classification, indexing, search, and retrieval of mobile media. The invention represents an application of intelligent content-processing techniques for managing large volumes of digital media in an efficient and systematic manner (Maharajh et al. (2018). [19]).

5.2 Summary of the Patent (From the Abstract):

The patent discloses a system and method for automatically processing and tagging mobile media content. The invention receives digital media through a suitable input source and analyses the content to identify relevant characteristics or information. Based on the analysis, the system generates appropriate tags, labels, or metadata and associates them with the corresponding media content. The generated information can be used for organizing, classifying, indexing, searching, retrieving, and discovering digital media. By automating the tagging process, the invention helps reduce manual effort and improves the efficiency of digital content-management systems (Maharajh et al. (2018). [19]).

5.3 Description of the Patent:

This patent presents an automated content-processing approach for managing digital media. The invention uses computational and artificial-intelligence-based techniques to analyse media content and identify information that can be used for tagging and classification purposes. The collected content information is processed to generate meaningful labels or metadata, which are associated with the respective digital media files.

The system architecture includes functions for receiving media content, analysing content characteristics, generating tags, storing metadata, and supporting content search and retrieval. These functions work together to improve the organization and accessibility of digital media. The automated process reduces the dependence on manual tagging and supports the efficient management of large collections of mobile and digital content.

A significant feature of the invention is its ability to generate content tags automatically based on the characteristics of digital media. This feature can support the classification of images, videos, audio files, and other forms of multimedia content. The generated tags and metadata help users and digital platforms locate relevant content more easily. The technology may also improve content discovery by connecting media files with searchable and descriptive information.

The patent has potential applications in social-media platforms, digital libraries, multimedia repositories, content-management systems, and other digital services. By combining automated content analysis, metadata generation, and information retrieval, the invention contributes to the development of intelligent and efficient digital-media management systems.

6. TECHNICAL CONTENT ANALYSIS :

6.1 Objective of the Invention:

What Problem Does It Solve?

The primary objective of this invention is to automate the processing and management of content tags associated with mobile media. Traditional methods of organising multimedia content often require users or content managers to manually add descriptive information to videos, images, and audio files. As the volume of digital media continues to increase, manual tagging becomes time-consuming and difficult to manage. The invention addresses this problem by providing an automated method for processing content tags and metadata associated with mobile media.

The invention aims to solve the problem of poor organisation of digital media content. Mobile devices generate large amounts of multimedia content, but such content may not always contain sufficient descriptive information. Without appropriate tags, users may experience difficulties while searching, filtering, categorising, and retrieving relevant media. Automated content-tagging systems can improve the organisation and management of digital media collections.

Another important objective is to reduce dependence on manual content classification. Manual tagging requires individuals to examine media files and assign suitable labels based on their content. This process may lead to delays, incomplete descriptions, and inconsistent classification. Automated content analysis can reduce repetitive work and improve the efficiency of managing large digital media collections.

The invention also addresses the problem of improving content discovery and retrieval. By processing meaningful tags and metadata, digital media platforms can connect multimedia files with descriptive information. This enables users and service providers to locate relevant content more easily. Automatically generated metadata can improve access to and management of digital media collections. Furthermore, the invention supports the effective management and distribution of mobile media. The processed tags can assist in searching, filtering, categorisation, recommendation, and personalised content delivery. Metadata management also supports the reuse of descriptive information when digital content is edited, organised, and distributed across different platforms.

The invention therefore provides a practical solution for digital media service providers that handle large collections of multimedia content. By automating content-tag processing, the system can reduce manual effort, improve consistency, increase operational efficiency, and enhance the accessibility of digital media.

Overall, the invention solves the problem of inefficient and manual content management by introducing an automated approach for processing tags and metadata associated with mobile media. It contributes to the development of intelligent multimedia management systems by improving content organisation, searchability, retrieval, and delivery through digital platforms (Maharajh et al. (2018). [19]).

6.2 Key Components / Method:

Describe How It Works:

The patent proposes an automated content-tag processing system designed to organise, classify, and manage mobile media. The system consists of interconnected processes that receive digital media, analyse its content, generate relevant tags, and associate metadata with the corresponding media files. These processes work together to improve content identification, organisation, search, retrieval, and management.

Step 1: Mobile Media Input

The process begins with the collection of mobile media content, including images, videos, and other digital media files. The system receives the media through mobile devices or digital platforms. The collected content forms the basis for further processing and tag generation.

Step 2: Content Analysis and Feature Identification

The collected media is examined to identify relevant characteristics and features. The system analyses the available content to determine useful information that can describe or classify the media. The identified information may be used to understand the subject, characteristics, or category of the digital content.

Step 3: Automated Tag Generation

After analysing the media content, the system generates suitable content tags and descriptive metadata. These tags represent meaningful information associated with the media. Automated tag generation reduces the need for manual classification and supports consistency in content organisation.

Step 4: Metadata Processing and Classification

The generated tags are processed and associated with the corresponding media files. The system organises the metadata into suitable categories or structures. This enables digital platforms to maintain a systematic collection of multimedia content and improves the management of large media libraries.

Step 5: Content Search and Retrieval

The processed tags and metadata support the searching and retrieval of mobile media. Users or service providers can locate relevant content using the descriptive information associated with media files. The system improves content discovery by connecting media resources with searchable attributes.

Step 6: Content Management and Distribution

The organised media and associated metadata can support filtering, categorisation, indexing, and distribution through digital platforms. The system improves the accessibility and management of mobile media content.

Step 7: Updating of Content Information

The system can support the updating of tags and metadata when new media content is added or existing information changes. Updating content information helps maintain the organisation and usability of digital media collections.

Overall, the method follows the sequence:

Mobile Media Input → Content Analysis → Feature Identification → Automated Tag Generation → Metadata Processing → Search and Retrieval → Content Management and Distribution.

The interconnected processes of the invention provide an automated approach to multimedia content organisation. By reducing manual tagging and improving metadata processing, the system enhances the efficiency, accessibility, and usability of mobile media platforms (Maharajh et al. (2018). [19]).

6.3 Innovative Elements:

What Makes It Novel Compared to Prior Art?

The innovative aspect of the invention lies in its automated approach to processing content tags and metadata associated with mobile media. Traditional media-management systems may depend on manual tagging, file descriptions, or separate classification processes. The invention provides an integrated method for analysing digital media, generating relevant tags, and associating descriptive information with the corresponding content.

The major innovative elements of the invention are described below:

(1) Automated Content Tag Generation:

The invention generates relevant content tags for mobile media through an automated processing system. This reduces the need for users or administrators to manually enter descriptive information for every media item.

(2) Content-Based Media Analysis:

The system analyses the characteristics of digital media to identify information useful for describing or classifying the content. This supports the generation of meaningful tags and metadata.

(3) Structured Metadata Association:

The invention associates generated tags and metadata with the corresponding media content. This creates an organised structure in which media files can be identified, classified, and managed according to their descriptive information.

(4) Improved Search and Retrieval:

The use of generated tags and metadata supports efficient searching and retrieval of mobile media. Users can locate relevant content through keywords, categories, and descriptive information associated with media files.

(5) Reduction of Manual Tagging Effort:

Traditional media-management systems may require users to manually describe and classify content. The invention reduces this repetitive work by automating the processing and generation of content tags.

(6) Support for Mobile Media Management:

The invention addresses the need to organise large collections of digital media generated and stored through mobile devices and digital platforms. Automated tagging supports better management of growing multimedia collections.

(7) Integration of Tagging and Metadata Processing:

A significant feature of the invention is the combination of content analysis, tag generation, and metadata association within a single content-management process. This integration improves the systematic organisation of digital media.

(8) Improved Content Discovery and Accessibility:

By associating digital media with descriptive tags and metadata, the invention makes content easier to identify, search, and access. This improves the usability of digital media collections for users and service providers.

Overall, the invention is innovative because it combines automated content analysis, tag generation, and metadata-based media management in a single system. Its main contribution is the reduction of manual effort and the improvement of content organisation, searchability, and accessibility in mobile media environments.

6.4 Technical Field:

Industry or Domain:

The patent belongs to the fields of **mobile media technology, digital content processing, content tagging, metadata management, multimedia delivery, and information retrieval**. The invention focuses on the automated processing of tags associated with mobile content and the use of such tags to support content ingestion, storage, hosting, encoding, distribution, search, and delivery.

The major technical fields related to the invention are described below:

Mobile Media Technology:

The patent is concerned with digital mobile media and the delivery of content to mobile-device users. It addresses the management and distribution of multimedia content through mobile communication platforms.

Automated Content Tagging:

A central technical field of the invention is automated content tagging. Tags are assigned to digital content and are used to provide information about the content and its processing requirements.

Metadata Management:

The invention uses tags and metadata to organise and manage digital content. Metadata may be associated with the content file or stored separately for use during subsequent processing and delivery.

Digital Content Processing:

The patent supports the processing of digital content during ingestion, encoding, transcoding, hosting, and distribution. Content tags can provide information that helps determine how content should be processed.

Content Delivery and Distribution:

The invention is related to the delivery of digital content to mobile devices. Tagged content can be processed according to delivery requirements and distributed through suitable mobile-media platforms.

Content Search and Discovery:

The invention supports content discovery through tags. Users and content managers can search for and identify relevant content based on associated tag information.

Digital Media Management Systems:

The technology can be applied to platforms that collect, store, manage, host, and distribute digital media. It supports the systematic organisation of content and associated metadata.

Advertising and Recommendation Systems:

The patent also describes the use of tags for recommendations and targeted advertising. Content and advertisements may be associated with tags to support relevant content delivery and commercial applications.

Thus, the patent is positioned at the intersection of **Mobile Media Technology, Automated Content Tagging, Metadata Management, Digital Content Processing, Multimedia Delivery, Information Retrieval, and Digital Media Management**. Its interdisciplinary nature enables applications in mobile-media platforms, digital content libraries, social-media environments, and content-distribution services (Holt & Wang (2013). [22]).

7. DETAILED DESCRIPTION OF THE INVENTION :

The invention, titled “**Automated Content Tag Processing for Mobile Media,**” presents a system and method for managing digital media through automated tag processing. Its main purpose is to improve the organisation, classification, management, and distribution of mobile media content. The invention reduces the dependence on manual content descriptions and provides a structured method for processing information associated with digital media files (Maharajh et al. (2018). [19]).

The system is designed to receive digital media content through a mobile media platform. The content may include video, audio, images, and other digital media files. During the content-ingestion process, tags and related metadata may be associated with the media. These tags provide information that helps the system determine how the content should be processed, stored, managed, and delivered.

A major component of the invention is the automated tag-processing facility. The system receives and processes tags associated with digital content. The tags may contain information about content requirements, media characteristics, file formats, quality, length, size, source, or other attributes. The processed information can be used by the platform to determine suitable operations for handling the content.

The invention also supports content preparation based on the information provided by the tags. Depending on the requirements, the platform may perform operations such as encoding, transcoding, formatting, hosting, storage, and preparation for distribution. Automated tag processing helps the platform apply appropriate content-management procedures in a systematic manner.

The tags and metadata may be stored together with the media content or maintained separately from the content files. The system may provide facilities for viewing, managing, modifying, and updating the tags. This allows administrators and service providers to maintain and control information associated with digital media throughout its lifecycle.

Another feature of the invention is the use of tags for content organisation and retrieval. Processed tags can support search, filtering, categorisation, and discovery of digital media. The metadata may also be used to support personalised content presentation, recommendations, advertising-related services, and other platform functions.

The invention may be implemented in mobile media platforms, digital content libraries, content-sharing systems, and other digital distribution environments. Tags can assist in managing content channels, storefronts, distribution requirements, digital rights management, and different business models associated with mobile media services (Maharajh et al. (2018). [19]).

The system architecture may include a content-ingestion module, a tag-processing facility, a content-preparation module, a metadata-management facility, a storage facility, and a content-delivery module. The content-ingestion module receives digital media and associated information. The tag-processing facility processes the tags and determines relevant content requirements. The content-preparation module prepares the media for distribution, while the storage and delivery modules maintain and provide access to the processed content.

The operational workflow begins when digital media content is received by the platform. Relevant tags are applied or associated with the content during the ingestion stage. The tags are then processed according to the requirements of the mobile media platform. Based on the processed information, the content may be encoded, formatted, stored, organised, and prepared for delivery. The processed tags and metadata can subsequently support content management, search, retrieval, personalisation, and distribution.

Overall, the invention provides an automated approach to processing tags associated with mobile media content. By connecting automated tag processing with content preparation, metadata management, storage, and delivery, the system supports efficient management of digital media. The invention is

particularly useful for mobile media platforms that handle large volumes of digital content and require systematic organisation and distribution.

8. CLAIMS OF THE INVENTION :

The invention claims a computer-implemented system and method for processing content tags associated with mobile media. The main purpose of the invention is to automate the processing, management, and use of tags and metadata during the ingestion, preparation, storage, and delivery of digital media content. The claims focus on improving the efficiency of mobile media platforms by connecting tag processing with content-management and distribution activities.

Claim Theme 1: Mobile Media Content Processing

The invention describes a system and method for receiving digital media content through a mobile media platform. The received content may include digital media files that require further processing, storage, management, and delivery (Maharajh et al. (2018). [19]).

Claim Theme 2: Tag Processing During Content Ingestion

The invention includes the application or association of tags with digital media during the content-ingestion stage. The tags provide information that can be used for subsequent processing and management of the content.

Claim Theme 3: Automated Processing of Content Tags

The invention describes an automated facility for processing tags associated with mobile media content. The system uses the information contained in the tags to support decisions regarding the handling and preparation of digital media.

Claim Theme 4: Tag-Based Content Preparation

The invention includes preparing digital content according to the information obtained from the processed tags. Such preparation may involve encoding, transcoding, formatting, hosting, storage, and other operations required for mobile media delivery.

Claim Theme 5: Metadata Association and Management

The invention supports the association of tags and metadata with corresponding digital media content. The metadata may be stored with the content or maintained separately and may be viewed, managed, modified, or updated when required.

Claim Theme 6: Content Classification and Organisation

The processed tags can be used to classify and organise digital media according to different content requirements and characteristics. This enables service providers and administrators to manage digital media more systematically.

Claim Theme 7: Search and Content Retrieval

The invention supports the use of tags and metadata for searching, filtering, and retrieving digital media content. The organised information helps users and platforms locate and access relevant content more efficiently.

Claim Theme 8: Content Distribution Through Mobile Platforms

The invention includes the delivery of processed digital media through mobile media platforms. The tags and associated metadata can assist in determining suitable distribution methods, content channels, storefronts, and other delivery requirements.

Claim Theme 9: Support for Additional Platform Functions

The invention may use processed tags and metadata to support functions such as personalisation, recommendation services, advertising, digital rights management, and other administrative activities related to digital media platforms.

Claim Theme 10: Updating of Tags and Content Information

The invention supports the updating of tags and associated content information during later processing or management operations. Updated information can be used for continued content organisation, preparation, and distribution.

Claim Theme 11: Computer-Implemented System Architecture

The invention describes a computer-implemented system comprising facilities for receiving content, processing tags, preparing media, managing metadata, storing content, and delivering digital media through a mobile platform.

Claim Theme 12: Integrated Mobile Media Management

The invention integrates automated tag processing with content preparation, metadata management, storage, search, and distribution. This integrated approach supports the systematic management of digital media within mobile content-delivery environments.

Summary of the Claims:

Collectively, the claims of the invention relate to an automated content-tag processing system for mobile media. The invention focuses on applying and processing tags during content ingestion and using the resulting information for content preparation, metadata management, organisation, storage, search, and distribution. Its main contribution is the integration of automated tag processing with mobile media management and delivery requirements. The technology can be applied to digital media platforms, mobile content libraries, content-sharing systems, and other environments that manage and distribute digital media.

9. CITATIONS & SIMILAR INVENTIONS :

9.1 Number of Citations in the Patent:

The patent **US20190354552A1**, titled *Automated Content Tag Processing for Mobile Media*, is related to earlier developments in digital media processing, content management, automated tagging, metadata organisation, and mobile content delivery. These references provide the technical background for the invention and show the development of technologies used to manage digital media content.

The cited technical areas generally include:

- Mobile media processing and management.
- Automated content tagging and metadata processing.
- Digital content ingestion and organisation.
- Multimedia content storage and delivery.
- Content classification and indexing.
- Search and retrieval of digital media.
- Mobile applications and digital media platforms.
- Computer-implemented content-management systems.

The patent builds upon earlier developments in digital media management and mobile content delivery. Its main focus is the automated processing of content tags associated with mobile media. These tags help organise content and support its preparation, management, search, retrieval, and distribution.

The prior-art references establish the technical foundation of the invention and demonstrate the development of automated approaches for managing large volumes of digital media content.

9.2 Number of Citations for the Patent:

The patent **US20190354552A1** has received attention from subsequent technologies and patent documents related to automated content tagging, metadata processing, mobile media management, and digital content delivery.

The related technological areas include:

- Automated tagging of digital media.
- Metadata generation and management.
- Mobile content-processing systems.
- Multimedia search and retrieval.
- Digital media classification and indexing.
- Content recommendation and discovery.
- Mobile applications and content-sharing platforms.
- Automated digital content delivery.

The patent is relevant to later developments because it connects content tags with the processing and delivery requirements of mobile media platforms. Its technical approach contributes to the broader development of automated digital media-management systems.

The exact number of citations should be taken from the patent database used for the study. Therefore, a specific numerical citation count should not be included unless it has been verified from a reliable patent source.

9.3 List of Similar Inventions:

Several patents and patent applications exhibit technological similarities with the present invention, **Automated Content Tag Processing for Mobile Media (US20190354552A1)**, because they address automated content tagging, multimedia annotation, image and video analysis, metadata management, content classification, and digital media organisation.

A. Automated Content Tagging and Media Annotation Patents:

(1) US20110276988A1

- Relates to automated tagging and annotation of digital media content.
- Uses automated techniques to associate descriptive information with media files.
- Is related to the present invention through its focus on reducing manual content-management activities.

(2) US20130290339A1

- Describes methods for automated annotation and classification of multimedia content.
- Supports the organisation and retrieval of digital media through descriptive information.
- Shares similarities with the present invention in its use of metadata for content management.

B. Image and Video Content Management Technologies:

(3) US20130028458A1

- Relates to computer-based processing and classification of digital visual content.
- Supports the organisation and retrieval of image-based media.
- Provides related technological background for automated digital media management.

(4) US20150381868A1

- Describes methods for managing and organising image and video collections.
- Supports the retrieval and classification of multimedia content.
- Is related to the present invention through its focus on efficient digital media organisation.

C. Multimedia Metadata and Information Retrieval Systems:

(5) US20080270118A1

- Focuses on metadata management for digital media content.
- Uses descriptive information to support media organisation and retrieval.
- Shares similarities with the present invention through metadata-based content management.

(6) US20100153477A1

- Describes systems for indexing and retrieving multimedia content.
- Supports searching through content-related information and classifications.
- Is related to the present invention through its emphasis on improving access to digital media collections.

D. Mobile Media Management Technologies:

(7) US20120278568A1

- Addresses the organisation and management of digital media associated with mobile devices.
- Supports the storage, categorisation, and access of photographs, videos, and other media.
- Is related to the present invention because of its focus on mobile-generated content.

(8) US20140223296A1

- Describes methods for organising and sharing digital media through mobile and online platforms.
- Uses content information and metadata to improve media accessibility.
- Shares similarities with the present invention in the area of mobile media management.

Overall Similarity Assessment:

The inventions listed above demonstrate the development of digital media-management technologies from conventional manual organisation methods toward automated content-processing systems. They share certain characteristics with **US20190354552A1**, including metadata management, content classification, media organisation, search, retrieval, and digital content delivery.

However, **US20190354552A1** focuses specifically on automated content tag processing for mobile media. Its main contribution is the integration of tag processing with content ingestion, preparation, metadata management, storage, search, and distribution within a mobile media platform. This integration supports efficient organisation, discovery, and management of photographs, videos, and other mobile-generated digital content.

10. BASIC ANALYSIS :

10.1 Importance of the Invention:

The invention addresses the need for efficient organisation and management of digital media on mobile platforms. Mobile media platforms handle large amounts of digital content, including photographs, videos, audio files, and related information. Managing this content requires proper tagging, classification, storage, and distribution. The invention provides an automated approach for processing content tags associated with mobile media.

The invention is important because it reduces dependence on repetitive manual processing of content information. By using tags and metadata, the system helps organise digital media according to different requirements and characteristics. This supports efficient content preparation, management, search, retrieval, and distribution.

The invention is particularly relevant to mobile media platforms, digital content libraries, content-sharing services, and other systems that manage large volumes of digital media. Its importance lies in connecting content tagging with the operational requirements of digital media delivery (Maharajh et al. (2018). [19]).

10.2 Description of the Invention:

The invention is an automated content-tag processing system designed for mobile media platforms. The system receives digital media content and associated tags or metadata during the content-ingestion process. The tags provide information that can be used to manage, prepare, store, and distribute the content.

The system processes the tags through an automated tag-processing facility. Based on the processed information, the platform may perform suitable operations such as encoding, transcoding, formatting, hosting, storage, and preparation for delivery. The tags and metadata may also be used for content organisation, search, retrieval, personalisation, and other platform functions.

The invention may include content-ingestion facilities, tag-processing facilities, content-preparation facilities, metadata-management systems, storage systems, and content-delivery systems. These components work together to support the systematic management of mobile media content.

The system reduces manual effort in managing content information and provides an organised approach to handling digital media. It can be applied to mobile applications, digital media platforms, content libraries, and other environments that require efficient content processing and distribution (Maharajh et al. (2018). [19]).

10.3 Design Analysis:

A. Technology:

The invention uses technologies related to mobile computing, digital media processing, metadata management, automated content tagging, content storage, and digital content delivery. Its technical structure connects tag processing with the preparation and distribution of mobile media.

The system may include content-ingestion components, automated tag-processing facilities, content-preparation modules, metadata-management systems, storage infrastructure, and delivery mechanisms. These components work together to support efficient management of digital media content ((Maharajh et al. (2018). [19]).

B. Ease of Use:

The invention improves ease of use by reducing the need for repeated manual handling of content information. Automated tag processing allows the platform to use available metadata systematically during content management and delivery.

The organised tagging process also helps users and service providers search, manage, filter, and access digital media more efficiently. This makes the handling of large digital content collections more convenient.

C. Cost:

The invention may help reduce operational costs associated with manual content management. Traditional media platforms may require employees or administrators to process content information and prepare files individually.

Automated tag processing reduces repetitive work and supports more efficient use of human resources. It may also improve productivity when large volumes of digital media are processed and distributed through a common platform.

D. Reliability:

Reliability is supported through the systematic processing of tags and metadata. The use of structured information helps maintain consistency during content preparation, storage, management, and delivery. The effectiveness of the system depends on the accuracy of the associated tags, the quality of the processing procedures, and the proper functioning of the platform. Regular updating and management of metadata can help maintain the usefulness of the system over time.

E. Resource Availability:

The invention can operate using commonly available digital resources such as mobile devices, computing systems, storage infrastructure, software platforms, and internet connectivity.

Since the invention is primarily software-based, it can be integrated into existing mobile media platforms and digital content-management systems. It does not necessarily require specialised physical equipment for its basic implementation.

F. Durability:

The invention has long-term relevance because digital media platforms continue to generate, store, and distribute increasing amounts of content. The software-based nature of the system allows its processing facilities and metadata-management functions to be updated according to changing platform requirements.

The system can also be integrated with future developments in cloud computing, digital storage, content delivery, and automated information management. This flexibility supports its continued application in digital media environments.

10.4 New Innovations and Value Addition in the Patent:

The patent introduces several important features in the field of mobile media management.

First, it provides an automated approach for processing content tags associated with digital media. This reduces the dependence on completely manual content-management procedures.

Second, the invention connects tag processing with content ingestion and preparation. The information obtained from tags can be used to determine suitable operations for handling digital media files.

Third, the invention supports the association and management of metadata with digital content. Tags may be stored with the content or maintained separately, allowing information to be viewed, modified, and updated when required.

Fourth, the processed tags support content organisation, search, filtering, retrieval, and discovery. This helps mobile media platforms manage digital content more systematically.

Fifth, the invention connects content-tag processing with storage, hosting, encoding, transcoding, and distribution activities. This integration improves the coordination of different stages of digital media management.

Finally, the invention provides practical value by offering an automated and structured approach to managing mobile media content. Its contribution lies in integrating tag processing with the operational requirements of digital content platforms, thereby supporting efficient organisation, management, and delivery of digital media (Maharajh et al. (2018). [19]).

11. STRUCTURAL ANALYSIS :

11.1 SWOC Analysis:

SWOC Analysis refers to the evaluation of Strengths, Weaknesses, Opportunities, and Challenges associated with an invention, technology, or business concept. It is useful for examining the internal capabilities and limitations of an innovation while also considering external opportunities and challenges that may affect its implementation and future development. In patent and innovation studies, SWOC analysis helps researchers evaluate technological usefulness, practical applicability, commercial potential, competitive position, and long-term sustainability (Puyt, Lie, & Wilderom (2023). [30])

The framework provides a structured approach for assessing an invention from technical, operational, business, and societal perspectives. It helps identify the factors that support successful adoption and the barriers that may limit implementation. In the context of automated content tag processing for mobile media, SWOC analysis is useful for understanding the contribution of the invention to digital media

organisation, content discovery, information retrieval, and artificial intelligence-based automation Gürel & Tat (2017). [31])

11.1.1 Strengths of the Patent:

Table 2: Strengths of the Patent

S. No.	Key Strength	Description
1	AI-Driven Content Automation	Automates content analysis and tag generation, significantly reducing manual effort in organising digital media.
2	Automated Media Organisation	Automates content analysis and tag generation, significantly reducing manual effort in organising digital media.
3	Efficient Search and Retrieval	Enables users to quickly search, filter, and retrieve relevant media content through meaningful tags and classifications.
4	Multimedia Content Processing	Processes photographs, videos, and other mobile-generated digital content to identify relevant features and characteristics.
5	Scalability and Operational Efficiency	Reduces the time and resources required to manually label large collections of digital media, enabling efficient content management.
6	Improved Content Discovery	Helps users discover and access relevant digital media more easily by associating content with descriptive and searchable information.

11.1.2 Weaknesses of the Patent:

Table 3: Weaknesses of the Patent

S. No.	Key Weakness	Description
1	Dependence on Recognition Accuracy	Incorrect identification of objects, scenes, or other media features may result in inaccurate content tags.
2	Complexity of Media Analysis	Different image qualities, video formats, lighting conditions, and backgrounds may affect the accuracy of automated content analysis.
3	High Processing Requirements	Analysing and processing large volumes of photographs and videos may require considerable computing power and storage capacity.
4	Privacy and Security Concerns	Processing personal photographs, videos, and other mobile media may create concerns regarding user privacy and data security.
5	Limited Contextual Understanding	The system may not always understand the personal, cultural, emotional, or contextual meaning of digital media content.
6	Dependence on Technological Updates	Changes in mobile devices, multimedia formats, artificial intelligence models, and digital platforms may require continuous system updates and maintenance.

11.1.3 Opportunities of the Patent:

Table 4: Opportunities of the Patent

S. No.	Key Opportunity	Description
1	Growth of Mobile Media	The increasing use of smartphones and digital platforms creates a growing demand for automated media organisation and tagging systems.
2	Integration with Cloud Storage	The invention can be integrated with cloud-based storage platforms to organise and manage large collections of photographs, videos, and multimedia files.
3	Social Media Applications	Automated content tagging can improve content classification, search, discovery, and personalised recommendations on social media platforms

4	Advancement in Artificial Intelligence	Developments in machine learning, computer vision, and deep learning can improve the accuracy and efficiency of automated content tag generation.
5	Digital Libraries and Archives	The technology can be used to organise and retrieve large collections of historical photographs, videos, documents, and multimedia records.
6	Commercial Digital Asset Management	Businesses can apply the invention to organise marketing materials, advertising content, customer-generated media, and other digital assets efficiently.

11.1.4 Challenges of the Patent:

Table 5: Challenges of the Patent

S. No.	Key Challenge	Description
1	Privacy and Data Protection	Ensuring the secure processing and storage of personal photographs, videos, and other mobile-generated media is a major challenge.
2	Accuracy and Reliability	Maintaining accurate content tags across different media types, image qualities, and complex visual environments can be difficult.
3	Technological Competition	Rapid developments in artificial intelligence and computer vision may create competing technologies with advanced tagging capabilities.
4	Changing Digital Standards	Changes in mobile devices, multimedia formats, storage systems, and software platforms may require continuous technological improvements.
5	Large-Scale Data Management	Managing the increasing volume of digital media requires efficient storage, processing, indexing, and retrieval infrastructure.
6	User Acceptance and Control	Some users may prefer manual control over how their personal media is labelled, classified, and organised.

This SWOC analysis reflects the patent's automated content analysis architecture, machine-learning and multimedia-processing technologies, content-tag generation methodology, metadata management system, and potential applications in mobile media organisation and digital content management.

11.2 ABCDEF Analysis of the Patent:

Based on the Patent Analysis methodology proposed by Aithal and Aithal, ABCDEF Analysis evaluates a patent from the perspective of various stakeholders by examining its Advantages, Benefits, Constraints, Disadvantages, Effectiveness, and Future Financial Value. The framework provides a systematic approach for understanding the technological, operational, commercial, and societal implications of an invention. It enables researchers to assess the positive and negative aspects of a patented product, process, or system while identifying its practical effectiveness and long-term sustainability. Through stakeholder-oriented evaluation, the analysis captures the perspectives of inventors, users, organisations, regulators, and society regarding the patent's value and impact. ABCDEF Analysis also facilitates the identification of commercialization potential, innovation opportunities, and implementation challenges associated with automated content tag processing technology. Consequently, it serves as a comprehensive qualitative framework for patent analysis, supporting scholarly research, strategic decision-making, and future technology forecasting (Aithal & Aithal (2018). [32]).

(i) Advantages of the Patent from Stakeholders' Perception:

Table 6: Advantages of the Patent from Stakeholders' Perception

S. No.	Key Advantage	Description
1	Automated Content Tag Generation	The patent uses automated content analysis to identify relevant features in photographs, videos, and other digital media and generate meaningful content tags.

2	Improved Digital Media Organisation	The system helps users organise large collections of mobile-generated media through structured tags and associated metadata.
3	Faster Search and Retrieval	Generated content tags enable users to search, filter, and retrieve relevant photographs and videos more quickly and efficiently.
4	Reduction in Manual Tagging Effort	The invention reduces the time and effort required for manually labelling, classifying, and organising digital media files.
5	Enhanced Content Discovery	The system improves the discoverability of digital media by associating files with descriptive information based on their content.
6	Support for Large Media Collections	Automated processing enables efficient management of large volumes of photographs, videos, and other multimedia content.
7	Improved User Convenience	Users can locate and manage their digital media more easily without depending entirely on manual file names, folders, or descriptions.
8	Wide Range of Applications	The technology can be applied in mobile applications, social media platforms, digital libraries, cloud storage systems, and digital asset management environments.

These advantages demonstrate that the patent creates value for users, digital platforms, content managers, businesses, and technology developers by improving media organisation, search efficiency, automation, scalability, user convenience, and digital content management capabilities.

(ii) Benefits of the Patent from Stakeholders' Perception:

Table 7: Benefits of the Patent from Stakeholders' Perception

S. No.	Key Benefit	Description
1	Better Media Accessibility	Makes digital media easier to access and locate.
2	Improved Information Management	Provides systematic organisation of multimedia content.
3	Time Efficiency	Reduces the time required to manage and search media files.
4	Increased Productivity	Improves efficiency in handling large digital media collections.
5	Enhanced User Experience	Simplifies the process of storing, organising, and discovering media.
6	Business Efficiency	Helps organisations manage digital content more effectively.
7	Technological Advancement	Promotes the use of AI and machine learning in media management.
8	Future Application Potential	Creates opportunities for advanced digital content management systems.

These benefits demonstrate that the patent provides value to users, businesses, digital platforms, and technology developers by improving accessibility, productivity, information management, and the overall efficiency of digital media processing.

(iii) Constraints of the Patent from Stakeholders' Perception:

Table 8: Constraints of the Patent from Stakeholders' Perception

S. No.	Key Constraint	Description
1	Dependence on Data Quality	The accuracy of generated tags depends on the quality of the digital media and available data.
2	Technological Infrastructure	Effective implementation requires suitable computing, storage, and software infrastructure.

3	Processing Limitations	Large volumes of photographs and videos may require significant processing time and resources.
4	Privacy Requirements	Personal media must be processed and stored according to privacy and data protection requirements.
5	System Integration	Integration with existing mobile applications and digital platforms may require technical modifications
6	Model Maintenance	Continuous updates and improvements may be necessary to maintain tagging accuracy and system performance.
7	User Dependency	The usefulness of automated tags may depend on user acceptance and willingness to use the system.
8	Limited Contextual Interpretation	The system may face difficulties in understanding complex personal or contextual meanings within digital media.

These constraints indicate that the successful implementation of the patent depends on data quality, technological infrastructure, privacy protection, system integration, and continuous maintenance. Addressing these constraints can improve the reliability, usability, and long-term adoption of the invention.

(iv) Disadvantages of the Patent from Stakeholders' Perception:

Table 9: Disadvantages of the Patent from Stakeholders' Perception

S. No.	Key Disadvantage	Description
1	Inaccurate Content Tags	The system may generate incorrect tags due to errors in media analysis.
2	Privacy Risks	Processing personal photographs and videos may create privacy and security concerns.
3	High Resource Requirements	Processing large multimedia collections may require considerable computing and storage resources.
4	Dependence on Technology	System performance depends on the availability of suitable devices, software, and network infrastructure.
5	Limited Human Understanding	Automated systems may not fully understand the personal or emotional meaning of media content.
6	Maintenance Requirements	Regular software updates and model improvements may be necessary to maintain system performance.
7	Integration Difficulties	Connecting the system with existing mobile and digital platforms may require additional technical effort.
8	User Acceptance Issues	Some users may prefer manual control over the tagging and organisation of their personal media

These disadvantages show that the patent may face challenges related to accuracy, privacy, resource requirements, technology dependence, and user acceptance. Proper system development and continuous improvement can help reduce these limitations.

(v) Effectiveness of the Patent from Stakeholders' Perception:

Table 10: Effectiveness of the Patent from Stakeholders' Perception

S. No.	Key Effectiveness	Description
1	Efficient Content Processing	Automates the analysis and tagging of digital media content.

2	Improved Media Management	Helps organise and classify large collections of photographs and videos.
3	Faster Information Retrieval	Enables quick searching and retrieval of relevant media files
4	Reduction in Manual Effort	Minimises the need for manual tagging and content organisation.
5	Enhanced Content Accessibility	Makes digital media easier to locate and access through descriptive tags.
6	Scalability	Supports efficient processing of increasing volumes of mobile-generated media.
7	Practical Application	Can be applied in mobile applications, social media, digital libraries, and cloud platforms.
8	Technological Relevance	Uses automation and intelligent content processing to address modern digital media management needs.

The effectiveness of the patent is reflected in its ability to automate content tagging, improve media organisation, enhance search and retrieval, and reduce manual effort. Its practical applications across different digital media environments demonstrate its technological and operational value.

(vi) Future Financial Value of the Patent from Stakeholders' Perception:

Table 11: Future Financial Value of the Patent from Stakeholders' Perception

S. No.	Key Financial Value	Description
1	Reduction in Operational Costs	Reduces expenses related to manual tagging and digital media organisation.
2	Increased Productivity	Enables organisations to manage large media collections with fewer manual resources.
3	Commercial Licensing Potential	The technology can be licensed to mobile applications, social media platforms, and digital media companies.
4	Digital Asset Management Market	Creates opportunities in the growing market for automated digital content management solutions.
5	Cloud-Based Service Opportunities	Can support paid media organisation, storage, and content management services.
6	Business Integration Potential	Can be integrated into existing digital platforms and enterprise media management systems.
7	Revenue from Technology Adoption	Organisations may generate financial value by adopting automated tagging and retrieval systems.
8	Long-Term Innovation Value	Future developments in AI and multimedia processing may increase the commercial value of the invention.

The patent has future financial value through cost reduction, improved productivity, technology licensing, digital asset management applications, and integration with commercial digital platforms. Its long-term value may increase with the growth of mobile media and advancements in artificial intelligence-based content management.

11.3 Business Opportunities & Challenges:

11.3.1 Business Opportunities in the Industry Environment:

The patent “*Automated Content Tag Processing for Mobile Media*” presents business opportunities by transforming manual mobile-media organisation into an automated, AI-based content management process. The invention supports automated analysis of media files, generation of content tags, metadata association, and efficient search and retrieval. These capabilities can create value for mobile applications, social-media platforms, digital libraries, cloud-storage providers, and other digital-content management businesses [33-40].

(1) Digital Transformation of Media Management:

The patent creates opportunities for organisations to replace manual media labelling and classification with automated content-tag processing. This can reduce time and effort, improve content organisation, and support faster access to relevant photos and videos. Automated tagging also enables businesses to manage large media collections more efficiently.

(2) Expansion into Multiple Digital Content Industries:

The technology can be applied in:

- Mobile gallery and media-management applications
- Social-media and content-sharing platforms
- Cloud-storage and backup services
- Digital libraries and archives
- Online publishing and news-media platforms
- E-commerce product-image management
- Marketing and advertising content management
- Enterprise document and digital-asset management

This wide applicability increases the potential market for the invention.

(3) Intelligent Content Management Platforms:

The patent enables the development of platforms that automatically organise and classify digital media.

Businesses can provide features such as:

- Automated content tagging
- Media categorisation
- Keyword-based search
- Content filtering
- Similar-media discovery
- Personalised media organisation

These services can improve user convenience and create opportunities for premium digital-content management solutions.

(4) Personalised and Targeted Content Services:

Automatically generated tags and metadata can support personalised content recommendations and targeted digital services. Platforms can use organised media information to improve content discovery, search relevance, and user engagement. This can create additional opportunities for advertising, content recommendation, and customer-retention services.

(5) AI-as-a-Service Commercialisation:

The core content-processing technology can be licensed or integrated into:

- Mobile application companies
- Social-media platforms
- Cloud-storage providers
- Digital-asset management companies
- Media and publishing organisations

This creates opportunities for Software-as-a-Service (SaaS), enterprise licensing, and technology-integration models.

(6) Data Analytics and Digital-Asset Insights:

The automated tagging process generates structured information about digital media collections. This information can support:

- Content usage analysis
- Search-behaviour analysis
- Media categorisation
- Digital-asset planning
- Content-performance analysis

Such insights can help businesses improve their content-management and marketing decisions.

(7) Global Scalability:

Since the invention is based on digital media processing and software technology, it can be deployed across different regions through mobile applications, cloud platforms, and digital services. This allows businesses to expand their media-management solutions without requiring extensive physical infrastructure.

(8) Continuous Improvement Through AI Development:

The technology can support further improvement through better content-recognition models, improved tagging methods, and larger training datasets. Continuous development can improve tagging accuracy, search performance, and the ability to manage different types of digital media.

11.3.2 Challenges in the Competitive Environment:

Despite its business opportunities, the patent faces several competitive and operational challenges in the digital-content industry.

(1) Rapid Technological Competition:

The automated media-processing industry includes competition from:

- Mobile technology companies
- Social-media platforms
- Cloud-storage providers
- Digital-asset management companies
- Artificial intelligence startups

Competitors may develop similar tagging and media-organisation technologies, which may reduce differentiation.

(2) Accuracy and Reliability Challenges:

The effectiveness of automated tagging depends on the quality of content analysis and classification. Incorrect tags, incomplete metadata, or inaccurate content identification may reduce the usefulness of the system and affect user trust.

(3) Data Privacy and Security Concerns:

Mobile media may contain personal photographs, videos, and other sensitive information. Businesses using automated content-processing systems must protect user data and maintain appropriate privacy and security standards. Failure to do so may create legal, financial, and reputational risks.

(4) Dependence on Large Training Datasets:

Advanced content-recognition systems require suitable datasets for identifying different media features and categories. Collecting, organising, and maintaining these datasets requires continuous investment in data quality, model development, and system testing.

(5) Resistance to Automated Media Organisation:

Some users and organisations may prefer manual control over the classification and organisation of their digital media. Concerns about incorrect tagging, loss of control, or dependence on automated systems may slow adoption.

(6) High Development and Infrastructure Costs:

Developing and maintaining the technology may require investment in:

- Artificial intelligence algorithms
- Machine-learning models
- Cloud infrastructure
- Data storage
- Processing systems
- Cybersecurity
- Mobile and software applications

These requirements may create barriers for smaller businesses.

(7) Patent and Intellectual Property Competition:

The invention operates in a competitive technological environment involving artificial intelligence, computer vision, metadata processing, and digital-content management. Other organisations may develop alternative technologies, challenge intellectual-property rights, or introduce design-around solutions.

(8) Customer Trust and Adoption Challenges:

Users may expect accurate and relevant tags for their personal and professional media collections. If the system produces irrelevant or incorrect classifications, users may reduce their dependence on automated media-management services. Building trust requires continuous improvement, transparency, and reliable performance.

Thus, the patent offers substantial **business opportunities** through automated media organisation, AI-based content management, digital-platform integration, SaaS commercialisation, and global scalability. At the same time, it faces challenges related to technological competition, tagging accuracy, data privacy, training-data requirements, infrastructure costs, intellectual-property competition, and user adoption. Overall, the invention has commercial potential in the growing digital-media management industry, particularly where automated classification, search, and content discovery are important.

11.4 Market and Business Value Estimation:

The patent possesses significant business value because it combines Artificial Intelligence (AI), Machine Learning, Automated Content Tagging, Metadata Processing, Mobile Media Platforms, and Digital Content Management Technologies [33-40]. The invention addresses the growing need for efficient organisation, classification, and retrieval of large collections of photos, videos, and other digital media. By reducing manual tagging and improving content search, the technology can support mobile applications, social-media platforms, cloud-storage providers, digital libraries, and enterprise content-management systems.

(1) Commercial Applications:

Real-World Use Cases and Product Lines:

A. Mobile Media Management

The primary commercial application is in mobile media-management systems. The patent can automatically analyse digital media and generate relevant content tags and metadata. This helps users organise large collections of photographs and videos, improving accessibility and reducing the need for manual descriptions.

B. Social Media and Content-Sharing Platforms

Social-media platforms can use automated content tagging to classify uploaded photographs and videos.

The technology can support:

- Content categorisation
- Keyword-based searching
- Media filtering
- Similar-content discovery
- Improved content recommendations

These applications can improve user experience and platform efficiency.

C. Cloud Storage and Digital Backup Services

Cloud-storage providers can integrate automated tagging systems to organise users' digital media collections. The technology can support:

- Automatic media classification
- Faster file retrieval
- Searchable metadata
- Digital-asset organisation
- Large-scale media management

This creates opportunities for premium storage and intelligent content-management services.

D. Digital Libraries and Archives

Libraries, museums, archives, and research institutions can use the technology to organise photographs, videos, and other digital records. Automated tagging can reduce manual cataloguing work and improve access to historical and educational media collections.

E. Marketing and Digital Asset Management

Marketing agencies and businesses can apply the technology to organise promotional images, product photographs, videos, and campaign materials. Improved tagging and retrieval can support faster content production, campaign management, and digital-asset sharing.

(2) Current Implementations:

Is it Used in a Current Product or Business?

The patent describes a practical technology for automated content analysis and tag processing in mobile media environments. Its components are suitable for integration into mobile applications, digital-content platforms, cloud services, and media-management systems.

The technology can support commercial applications involving:

- Automated content analysis
- Content feature identification
- Automated tag generation
- Metadata association
- Media indexing
- Content classification
- Search and retrieval

These features indicate that the invention has practical business applications beyond a theoretical research concept.

Table 12: Commercial Maturity Level

Factor	Assessment
Prototype	Technically Developed
Commercial Product	Suitable for Integration
Revenue Generation	Possible
Industry Adoption	Growing
Scalability	High
Digital Platform Compatibility	High

The patent has potential for commercial implementation because its technology can be incorporated into existing mobile and digital-content platforms.

(3) Competitor Landscape:

Are Competitors Working on Similar Technologies?

Yes. The competitive environment is active because many technology companies are developing AI-based systems for image recognition, video analysis, metadata generation, digital asset management, and content discovery.

Direct Competitors

- Mobile media-management applications
- Social-media content platforms
- Cloud-storage providers
- Digital-asset management companies
- AI-based image and video analysis platforms

Technology Competitors

Companies developing:

- Computer vision systems
- Image-recognition software
- Video-analysis technologies
- Automated metadata-generation tools
- Digital-content classification systems
- AI-powered search and recommendation systems

Competitive Advantages of this Patent

- Automated content-tag generation
- Reduced manual media classification
- Improved organisation of digital content
- Faster search and retrieval
- Support for large media collections
- Integration with mobile and digital platforms

The competitive environment may require continuous technological improvement because similar AI-based content-management solutions can be developed by other organisations.

(4) Licensing Potential:

Could it Generate Royalties or Partnerships?

The patent has licensing and partnership potential because automated content tagging is useful across several digital industries.

Potential Licensees

A. Mobile Application Companies

Mobile application developers can integrate automated tagging and media-organisation features into gallery, photo-management, and video-management applications.

B. Social-Media Companies

Social-media platforms can use the technology for content classification, search improvement, and media discovery.

C. Cloud-Storage Providers

Cloud companies can license the technology to improve digital-media organisation, indexing, and retrieval services.

D. Digital Library and Archive Organisations

Libraries, museums, educational institutions, and archives can use automated tagging to manage large digital collections.

E. Software-as-a-Service Partnerships

The technology can be commercialised through:

- SaaS subscriptions
- API licensing
- Enterprise software agreements
- White-label digital-content solutions
- Technology partnerships

Because the patent supports automated content organisation and retrieval, it may create opportunities for recurring licensing and software-integration revenue.

(5) Market Trends:

Is the Domain Growing?

The market outlook for AI-based digital-content management is favourable because digital media generation and storage are increasing rapidly.

A. Growth of Artificial Intelligence

AI adoption is expanding across:

- Mobile applications
- Social media
- Cloud computing
- Digital marketing
- Enterprise software
- Media and entertainment

The patent aligns with these developments through automated content analysis and tagging.

B. Increasing Digital Media Generation

Individuals, businesses, and organisations continuously create large numbers of photographs, videos, and digital files. This increases the need for automated organisation, classification, and retrieval systems.

C. Demand for Automation

Businesses seek to:

- Reduce manual data-entry work
- Improve content-management efficiency
- Save time in media classification
- Improve search accuracy
- Manage large digital collections

The patented technology directly supports these requirements.

D. Growth of Cloud-Based Content Management

Cloud platforms increasingly provide intelligent storage, search, and organisation services. Automated tagging can improve the usefulness of cloud-based digital-media management systems.

E. Expansion of AI-Enabled Search and Discovery

Future digital platforms are expected to rely more on:

- Intelligent search systems
- Automated classification
- Content recommendations
- Personalised media discovery
- Metadata-based information management

The patent's automated content-tag processing technology positions it well for these developments by supporting intelligent media organisation, classification, search, and content discovery.

Estimated Market Growth Potential: 9/10

(6) Overall Business Value Assessment:

Table 13: Overall Business Value Assessment

Business Value Dimension	Rating (10)
Commercial Applications	8.5
Current Implementations	7.5
Competitor Landscape Position	8.0
Licensing Potential	8.5
Market Trends Alignment	9.0
Overall Business Value	8.3/10

The overall business value assessment indicates that the patent has strong commercial potential in the growing digital-media management industry. Its applications in mobile media organisation, social-media platforms, cloud storage, digital libraries, and digital-asset management create opportunities for business growth and technology integration. The patent's relevance to artificial intelligence, automated content tagging, metadata processing, and intelligent search further strengthens its future market value. However, successful commercialisation depends on implementation, technological development, market competition, data privacy, and user adoption [33-40].

12. SUGGESTIONS :

12.1 Suggestions for Implementation:

(1) Enhance Multi-Modal Media Processing:

The system should support different types of digital media, including photographs, videos, audio files, and other multimedia formats. This would improve the flexibility of automated content analysis and tagging.

(2) Improve AI-Based Tagging Accuracy:

Future implementations should use advanced artificial intelligence and machine-learning models to improve content recognition and generate more accurate tags. Regular model training and testing can reduce incorrect or irrelevant classifications.

(3) Develop Industry-Specific Content Models:

Separate content-processing models can be developed for:

- Social-media platforms
- Digital libraries and archives
- E-commerce platforms
- Marketing agencies
- News and publishing organisations
- Enterprise digital-asset management

This would increase the commercial applicability of the technology.

(4) Strengthen Human Validation:

A human verification option should be provided for sensitive or important media collections. Users and content managers can review, correct, or update automatically generated tags to improve reliability and system performance.

(5) Deploy as a Cloud-Based Platform:

The technology can be commercialised through:

- Cloud-based media-management services
- API-based integration
- Enterprise software licensing
- White-label solutions

This would enable organisations of different sizes to adopt automated content-tag processing.

(6) Enhance User Experience:

The media-management interface should include:

- Easy content searching
- Custom tag editing
- Media filtering
- Category-based organisation
- Similar-content discovery
- Personalised content suggestions

These features would improve user convenience and engagement.

12.2 Suggestions for Related New Ideas & Patents:

(1) AI-Based Contextual Tagging System:

Develop a patent for an AI system that generates tags by understanding the context, relationships, and activities represented in photographs and videos.

(2) Real-Time Video Content Tagging Platform:

Create a system that automatically analyses video content while it is being recorded or uploaded and generates tags in real time.

(3) Privacy-Preserving Media Tagging System:

Develop a secure content-tagging technology that processes personal media while protecting user privacy and sensitive information.

(4) Multilingual Content Tag Generation System:

Create an AI-based platform capable of generating content tags in multiple languages to support users and businesses across different regions.

(5) AI-Based Duplicate and Similar-Media Detection System:

Develop a patent that identifies duplicate, similar, or related photographs and videos to improve digital-media organisation and storage efficiency.

(6) Intelligent Digital Asset Recommendation Platform:

Combine automated content tagging with recommendation technology to suggest relevant images, videos, and digital assets based on user preferences and content history.

(7) Automated Media Metadata Enhancement System:

Create a system that automatically improves incomplete metadata by generating descriptions, categories, keywords, and other useful content information.

(8) Sustainability-Oriented Digital Media Management System:

Develop a technology that analyses digital-storage usage and recommends efficient media organisation, compression, archiving, and deletion practices to reduce unnecessary storage consumption and energy use.

12.3 Overall Recommendation:

The patent “Automated Content Tag Processing for Mobile Media” represents a valuable technological innovation in the field of artificial intelligence and digital-content management. The invention addresses the growing challenge of organising large collections of photographs, videos, and other multimedia files by automating content analysis, tag generation, metadata association, classification, and search.

Given the increasing use of mobile devices, social-media platforms, cloud storage, and digital media, the technology has potential applications across several industries. It can be further developed through

improved AI models, cloud-based services, industry-specific applications, privacy-preserving systems, and strategic technology partnerships.

Overall, the patent demonstrates strong technological relevance, practical business potential, scalability, and future innovation opportunities. Continued development and commercial integration can strengthen its usefulness in mobile media management, digital libraries, social-media platforms, enterprise content management, and other emerging digital-content industries.

13. CONCLUSION :

The patent “Automated Content Tag Processing for Mobile Media” presents a significant advancement in the application of artificial intelligence, machine learning, and automated content-processing technologies for digital-media management. By automatically analysing media files, identifying content features, generating relevant tags, associating metadata, and supporting efficient search and retrieval, the invention reduces the time and effort required for manual media organisation. The integration of automated content analysis, tagging, classification, indexing, and digital-content management demonstrates a practical and scalable solution for mobile applications, social-media platforms, cloud-storage providers, digital libraries, and enterprise media-management systems.

Based on the analysis, it is recommended that the technology be further enhanced through improved multimedia-processing models, multilingual tagging, privacy-preserving AI systems, real-time video analysis, and intelligent content-recommendation features. Future research and patent development may focus on contextual tagging, duplicate-media detection, automated metadata enhancement, and AI-based digital-asset management systems. Commercial deployment through cloud-based Software-as-a-Service (SaaS) platforms, API integrations, enterprise licensing models, and strategic technology partnerships can further expand its market reach and business potential. Overall, the patent demonstrates strong technological relevance, practical business value, and future scalability, making it a promising innovation for next-generation automated digital-media management and content-discovery platforms.

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