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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
63/684,731	**08/19/2024 05:32:28 PM Z ET**	**1075ESHW0001PV**

Title of Invention

SYSTEM AND METHOD FOR AUTOMATED ANALYSIS AND CLOUD STORAGE OF DIGITAL CONTENT FROM AN ELECTRONIC IMAGING DEVICE

Application Information

APPLICATION TYPE	Utility - Provisional Application under 35 USC 111(b)	PATENT #	-
CONFIRMATION #	6158	FILED BY	Seokhee LEE
PATENT CENTER #	66842009	FILING DATE	-
CUSTOMER #	83220	FIRST NAMED INVENTOR	Venkata Krishnan GANESAN
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Steve Cho

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Patent document.pdf	21	Specification	283 KB
ADS_1075ESHW0001PV.pdf	9	Application Data Sheet	2223 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Patent document.pdf	ED39FCEA2A89B13EDCFE9B1EAF6191C4D23D26944EA3FD6 9736D91EE80C73CD048901A0BC6522CB33C2C6DE110906E4 C86072AEB06BC0C922E40DA2D69D2648C
ADS_1075ESHW0001PV.pdf	17B829EDB1A4D5E4D091C04986162DDFC07D1762D1020A319 C742BCD07217A2EAF6C170598736CEFC33C60839DA7E766D

190D132302C0D097E3A7E82A05F0CEF

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
63/684,731	**08/19/2024 05:32:28 PM Z ET**	**1075ESHW0001PV**

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PATENT CENTER #	66842009	AUTHORIZED BY	Steve Cho
CUSTOMER #	83220	FILING DATE	-
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Venkata Krishnan GANESAN

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 3009	**E20248IH33078710**	**Seokhee LEE**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2005	PROVISIONAL APPLICATION FILING FEE	120.00	1	120.00
			TOTAL AMOUNT:	**$120.00**

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C.

371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/14 (01-22)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	1075ESHW0001PV
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED ANALYSIS AND CLOUD STORAGE OF DIGITAL CONTENT FROM AN ELECTRONIC IMAGING DEVICE	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Venkata	Krishnan	GANESAN	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Chennai	Country of Residence	IN

Mailing Address of Inventor:

Address 1	c/o 6th Floor, Khivraj Complex II, #480		
Address 2	Anna Salai, Nandanam		
City	Chennai	**State/Province**	
Postal Code	600035	**Country**	IN

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Anusha		SUNDARARAJAN	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Chennai	Country of Residence	IN

Mailing Address of Inventor:

Address 1	c/o 6th Floor, Khivraj Complex II, #480		
Address 2	Anna Salai, Nandanam		
City	Chennai	**State/Province**	
Postal Code	600035	**Country**	IN

Inventor 3 Remove

Legal Name

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Prefix	Given Name	Middle Name	Family Name	Suffix
	Satyapalsinh		GOHIL	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Chennai	Country of Residence [i]	IN

Mailing Address of Inventor:

Address 1	c/o 6th Floor, Khivraj Complex II, #480		
Address 2	Anna Salai, Nandanam		
City	Chennai	State/Province	
Postal Code	600035	Country [i]	IN

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	83220		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM AND METHOD FOR AUTOMATED ANALYSIS AND CLOUD STORAGE OF DIGITAL CONTENT FROM AN ELECTRONIC IMAGING DEVICE		
Attorney Docket Number	1075ESHW0001PV	Small Entity Status Claimed	☒
Application Type	Provisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country [i]

PTO/AIA/14 (01-22)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	1075ESHW0001PV
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR AUTOMATED ANALYSIS AND CLOUD STORAGE OF DIGITAL CONTENT FROM AN ELECTRONIC IMAGING DEVICE	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	83220		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Title of Invention	SYSTEM AND METHOD FOR AUTOMATED ANALYSIS AND CLOUD STORAGE OF DIGITAL CONTENT FROM AN ELECTRONIC IMAGING DEVICE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◯ Assignee	◯ Legal Representative under 35 U.S.C. 117	◯ Joint Inventor
◯ Person to whom the inventor is obligated to assign.	◯ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Applicant:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Steve Y. Cho/			Date (YYYY-MM-DD)	2024-08-19
First Name	Steve	Last Name	Cho	Registration Number	44612

Additional Signature may be generated within this form by selecting the Add button. Add

PTO/AIA/14 (01-22)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	1075ESHW0001PV
	Application Number	
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This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

1. Abstract:

This invention introduces an innovative device and system designed to revolutionize the workflow of digital photography by enabling automatic, real-time transfer of digital images and videos from DSLR cameras to cloud storage. The system consists of three primary components: a versatile hardware device, a user-friendly software application, and a cloud storage solution with integrated artificial intelligence capabilities.

The hardware device, engineered as the core of the system, is designed to retrofit seamlessly with a wide range of DSLR cameras through an AV port. This universal compatibility, coupled with a robust and durable build, ensures broad applicability across various camera models and brands manufactured since 2001. Featuring universal hotshoe mounting, a powerful processor, ample memory, and both Bluetooth and WiFi modules, the device allows for efficient data handling and wireless connectivity.

Upon initial setup, the device generates a temporary WiFi access point, facilitating a secure method for users to input their network credentials via the accompanying software application. This process ensures a streamlined and user-friendly setup experience. Once configured, the device establishes a robust and secure connection to the specified WiFi network, leveraging WPA/WPA2 encryption protocols to safeguard data transmission.

The software application serves as the user's control center, offering intuitive interfaces for initiating and terminating the upload process, configuring cloud storage settings, and monitoring real-time status updates. This application enhances user control and provides valuable feedback on camera connectivity and image transfer progress.

A key innovation of this system lies in its ability to transfer images to the cloud storage location in real-time, immediately upon capture. This feature significantly reduces the risk of data loss and eliminates the need for manual transfers, thereby streamlining the photographer's workflow. Furthermore, the system incorporates advanced AI algorithms that automatically rate and categorize uploaded images. This includes the intelligent identification of technical issues such as blur or underexposure, and assigning appropriate ratings to assist in the initial assessment and organization of captured images.

By combining hardware innovation, software usability, and AI-driven analysis, this invention addresses critical needs in the field of digital photography, offering a comprehensive solution that enhances efficiency, security, and image management capabilities for both professional and amateur photographers.

2. Background of the Invention:

The digital photography landscape has undergone significant transformations in recent years, with advancements in camera technology, cloud computing, and artificial intelligence reshaping the way images are captured, stored, and processed. Despite these advancements, a critical gap remains in the efficient transfer and management of digital images, particularly in professional and time-sensitive scenarios.

Professional photographers, photojournalists, and even enthusiastic amateurs frequently encounter situations where rapid image transfer and backup are crucial. Live events, breaking news coverage, remote shoots in challenging environments, and time-sensitive commercial projects all demand a seamless workflow from image capture to delivery. The current standard practice often involves a multi-step process: capturing images on a DSLR camera, manually transferring these files to a computer or mobile device, and then uploading them to cloud storage or sending them to clients. This workflow is not only time-consuming but also introduces multiple points of potential failure or human error.

Existing wireless transfer solutions have attempted to address this issue, but they often fall short in several key areas:

1. Real-time Capabilities: Many current solutions offer wireless transfer but lack true real-time functionality. There is often a significant delay between image capture and availability in cloud storage, which can be critical in fast-paced environments.
2. Universal Compatibility: Most wireless transfer systems are designed for specific camera models or brands, limiting their applicability and requiring photographers to potentially use different solutions for different equipment.
3. Ease of Use: Setting up and managing wireless transfers can be complex, often requiring technical expertise that detracts from the photographer's primary focus.
4. Security: As image files often contain sensitive or valuable content, the security of wireless transfers is paramount. Many existing solutions do not provide robust, end-to-end encryption or secure authentication methods.
5. Intelligent Image Analysis: While cloud storage solutions have become more sophisticated, they typically lack integrated AI-based analysis tools. Photographers are left to manually sort through, rate, and categorize their images, a time-consuming process that delays delivery and reduces productivity.
6. Durability and Reliability: Photography often occurs in challenging environments. Existing transfer solutions may not be designed to withstand the rigors of professional use in varied conditions.
7. Power Management: Long shooting sessions require solutions that are power-efficient and do not drain camera batteries, a consideration often overlooked in current wireless transfer systems.

The photography industry has long recognized these challenges, and there have been incremental improvements in wireless transfer technologies. Some camera manufacturers have introduced built-in WiFi capabilities, and third-party wireless adapters have entered the market.

However, these solutions often address only a subset of the identified issues and frequently introduce new complications, such as compatibility problems or complex setup procedures.

There is a clear and pressing need for a comprehensive solution that addresses all these challenges simultaneously. The ideal system would offer universal compatibility with DSLR cameras, provide secure and truly real-time image transfer to cloud storage, incorporate intelligent image analysis for preliminary sorting and rating, and offer an intuitive user experience that integrates seamlessly into existing photography workflows.

This invention aims to fill this significant gap in the market by providing a holistic system that combines hardware innovation, software usability, and AI-driven analysis. By doing so, it promises to revolutionize the digital photography workflow, offering photographers a powerful tool that enhances their productivity, protects their work, and allows them to focus more on their craft and less on the technical aspects of image management and transfer.

2. Background of the Invention: - *(Additional_information)*

In the rapidly evolving field of digital photography, the efficient transfer, management, and analysis of images have become critical components of a photographer's workflow. This necessity spans across the spectrum of photography, from professional photojournalists covering breaking news to amateur enthusiasts documenting personal events. The increasing demand for real-time content delivery, coupled with the growing file sizes of high-resolution images and videos, has created a pressing need for more advanced and streamlined solutions.

Traditionally, the process of transferring images from a DSLR camera to a storage or sharing platform involves multiple steps:

1. Capturing images on the camera's memory card
2. Manually connecting the camera or memory card to a computer
3. Transferring files to the computer's local storage
4. Selecting and organizing the images
5. Uploading selected images to cloud storage or sharing platforms

This multi-step process presents several challenges:

Time Consumption: In fast-paced environments such as live events, sports photography, or breaking news coverage, the delay caused by this process can be significant, potentially leading to missed opportunities or delayed content delivery.

Risk of Data Loss: The manual handling of memory cards and the reliance on intermediate devices increase the risk of data loss due to hardware failure, human error, or environmental factors.

Workflow Interruption: Photographers must pause their shooting to engage in file transfer and management tasks, disrupting their creative flow and potentially missing crucial moments.

Resource Intensive: The process requires additional equipment (computers, card readers) and software, adding to the photographer's burden, especially in remote or challenging locations.

While some wireless transfer solutions have emerged to address these issues, they often fall short in several key areas:

Limited Compatibility: Many wireless solutions are proprietary, designed to work with specific camera models or brands, limiting their universal applicability.

Lack of Real-Time Capability: Existing wireless transfers often involve significant delays, failing to meet the demands of truly real-time content delivery.

Absence of Integrated Analysis: Most current solutions focus solely on file transfer, neglecting the crucial aspect of image analysis and categorization, which remains a manual and time-consuming task.

Security Concerns: As digital content becomes increasingly valuable, the security of wireless image transfers has become paramount. Many existing solutions lack robust encryption and secure authentication methods.

Complex Setup and Operation: Some wireless transfer systems require complex configuration processes, creating a barrier to adoption and efficient use, especially for less technically inclined photographers.

Limited AI Integration: While artificial intelligence has made significant strides in image analysis, most current photography workflows do not incorporate AI capabilities for automatic image rating, categorization, or initial quality assessment.

Power Management: Extended shooting sessions require solutions that are energy-efficient and do not significantly impact the camera's battery life, a consideration often overlooked in existing wireless transfer systems.

Environmental Adaptability: Photography often occurs in challenging environments. Many current solutions are not designed to withstand diverse weather conditions or rugged use.

The photography industry has long recognized these challenges, leading to incremental improvements in wireless transfer technologies. Some camera manufacturers have introduced built-in WiFi capabilities, and third-party wireless adapters have entered the market. However,

these solutions often address only a subset of the identified issues and frequently introduce new complications, such as compatibility problems or complex setup procedures.

There is a clear and pressing need for a comprehensive solution that addresses all these challenges simultaneously. The ideal system would offer:

1. Universal compatibility with a wide range of DSLR cameras
2. Secure and real-time image/video transfer to cloud storage
3. Integrated AI-driven image analysis for preliminary sorting, rating, and quality assessment
4. An intuitive user experience that seamlessly integrates into existing photography workflows
5. Robust construction suitable for various environmental conditions
6. Efficient power management to support extended use
7. Enhanced security features to protect valuable digital content

This invention aims to fill this significant gap in the market by providing a holistic system that combines hardware innovation, software usability, and AI-driven analysis. By addressing the multifaceted challenges faced by photographers in the digital age, this invention promises to revolutionize the digital photography workflow. It offers photographers a powerful tool that enhances their productivity, protects their work, and allows them to focus more on their craft and less on the technical aspects of image management and transfer.

The proposed system, comprising a specialized hardware device, intuitive software application, and AI-enhanced cloud storage solution, represents a paradigm shift in how digital images are captured, transferred, stored, and initially processed. By streamlining these critical aspects of the photographic process, this invention has the potential to significantly impact the field of photography, from improving the speed and efficiency of news coverage to enhancing the capabilities of photographers in various specialties and skill levels.

3. Brief Description of the Drawings:

Figure 1: A block diagram illustrating the main components of the Real-Time Camera-to-Cloud Image Transfer and Analysis System. This figure presents a high-level overview of the entire system. It shows three main interconnected components: the hardware device, the software application, and the cloud storage/AI analysis platform. Arrows indicate the flow of data and control signals between these components. The diagram also includes representations of the DSLR camera and the user's mobile device to illustrate how they integrate with the system.

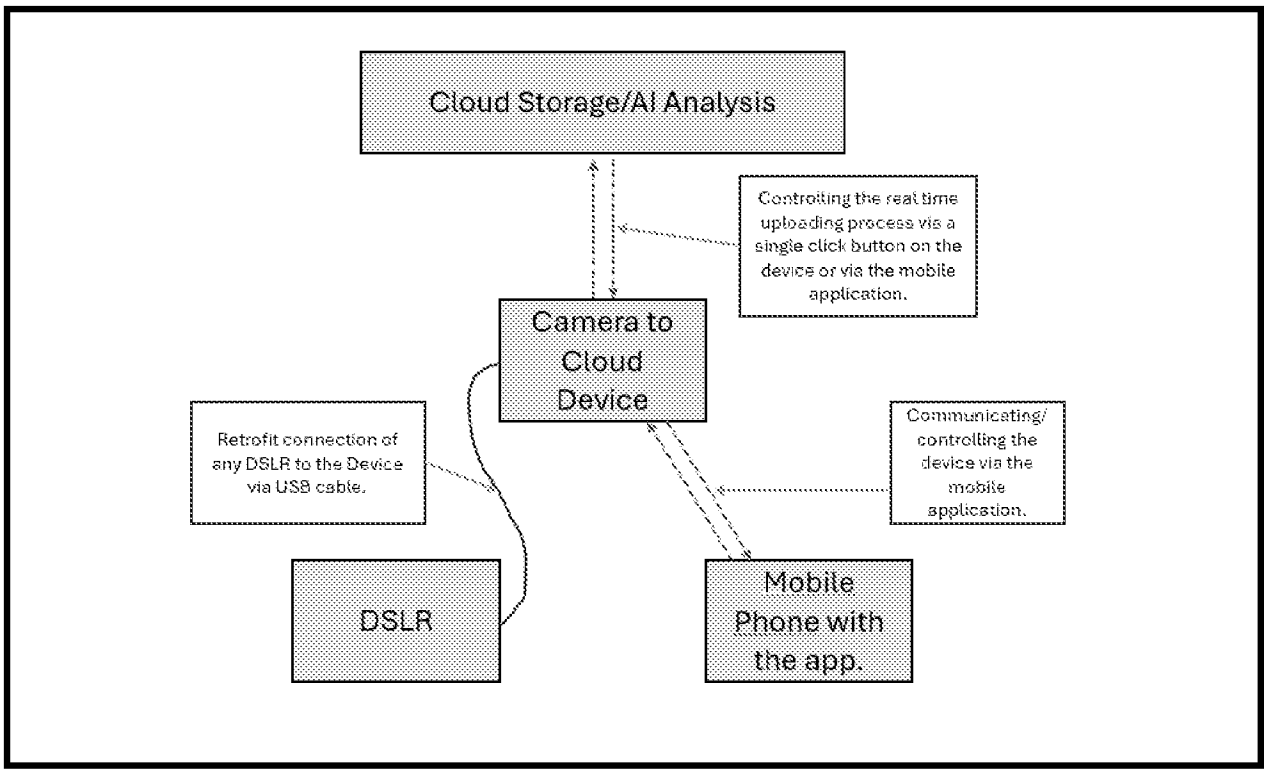

Figure 1. Flow chart illustrating the main components of the Real-Time Camera-to-Cloud Image Transfer and Analysis System.

Figure 2: A schematic representation of the hardware device, showing its internal components and external connections. This detailed schematic provides an inside look at the hardware device. It illustrates the following key components:

- The central processor unit
- Memory modules (both RAM and flash storage)
- WiFi and Bluetooth modules
- The battery and power management system
- USB and AV ports for camera connection
- The charging port External views show the device's compact form factor and ruggedized casing. Callouts highlight specific features such as status LEDs, power button, and connection ports.

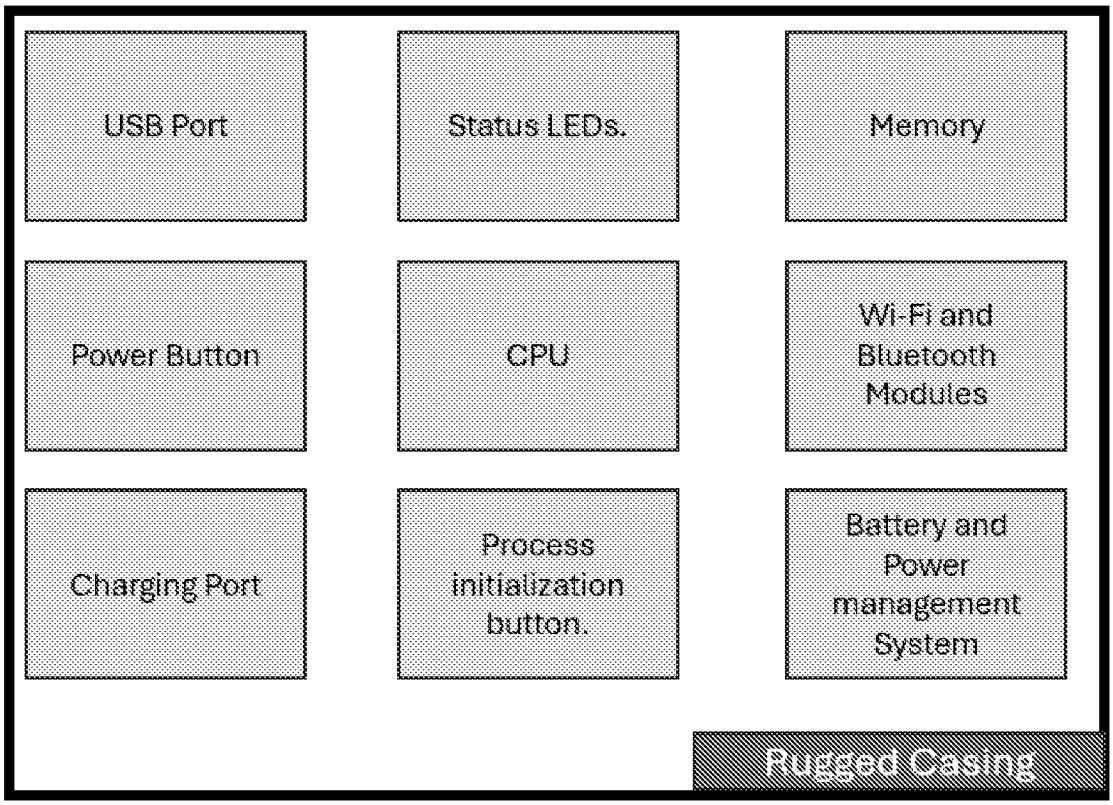

Figure 2. Schematic diagram illustrating the hardware device

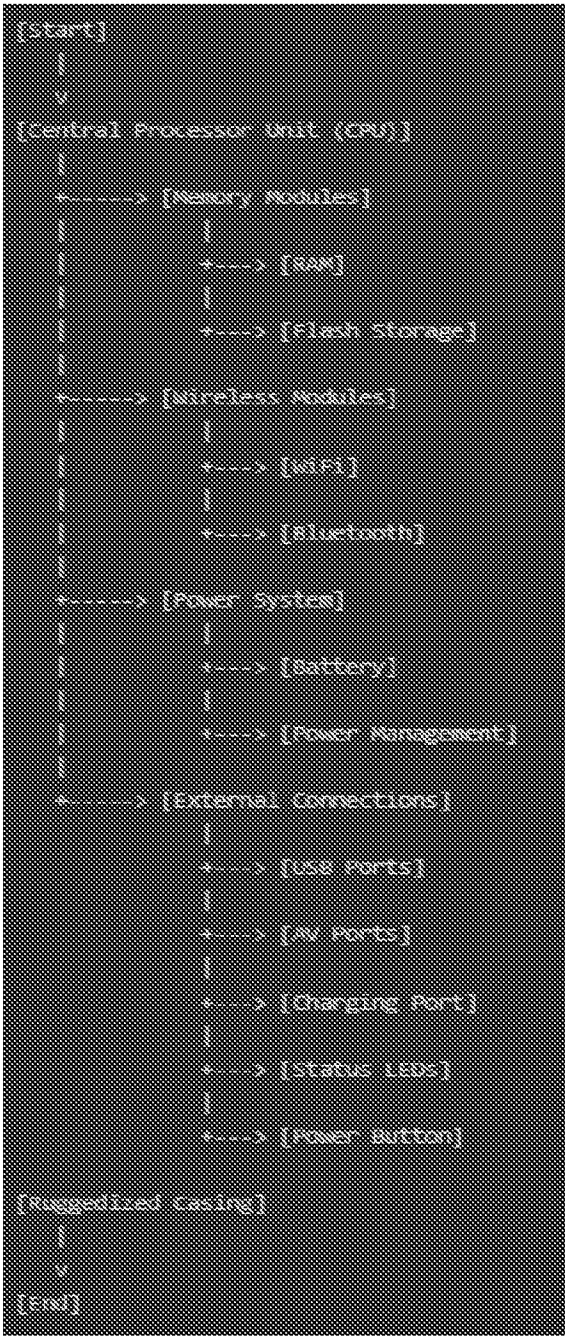

Figure 2.1 Textual representation outlines the main components and their relationships

Figure 3: A flowchart depicting the process of initial setup and WiFi connection establishment. This flowchart outlines the step-by-step process of setting up the device for first use:

1. Device power-on and initialization
2. Creation of temporary WiFi access point
3. User connection to the access point via mobile app
4. Input of WiFi network credentials
5. Device connection to the specified WiFi network
6. Confirmation of successful connection
7. Transition to operational mode The flowchart uses standard symbols to represent processes, decisions, and data flows, providing a clear visual guide to the setup procedure.

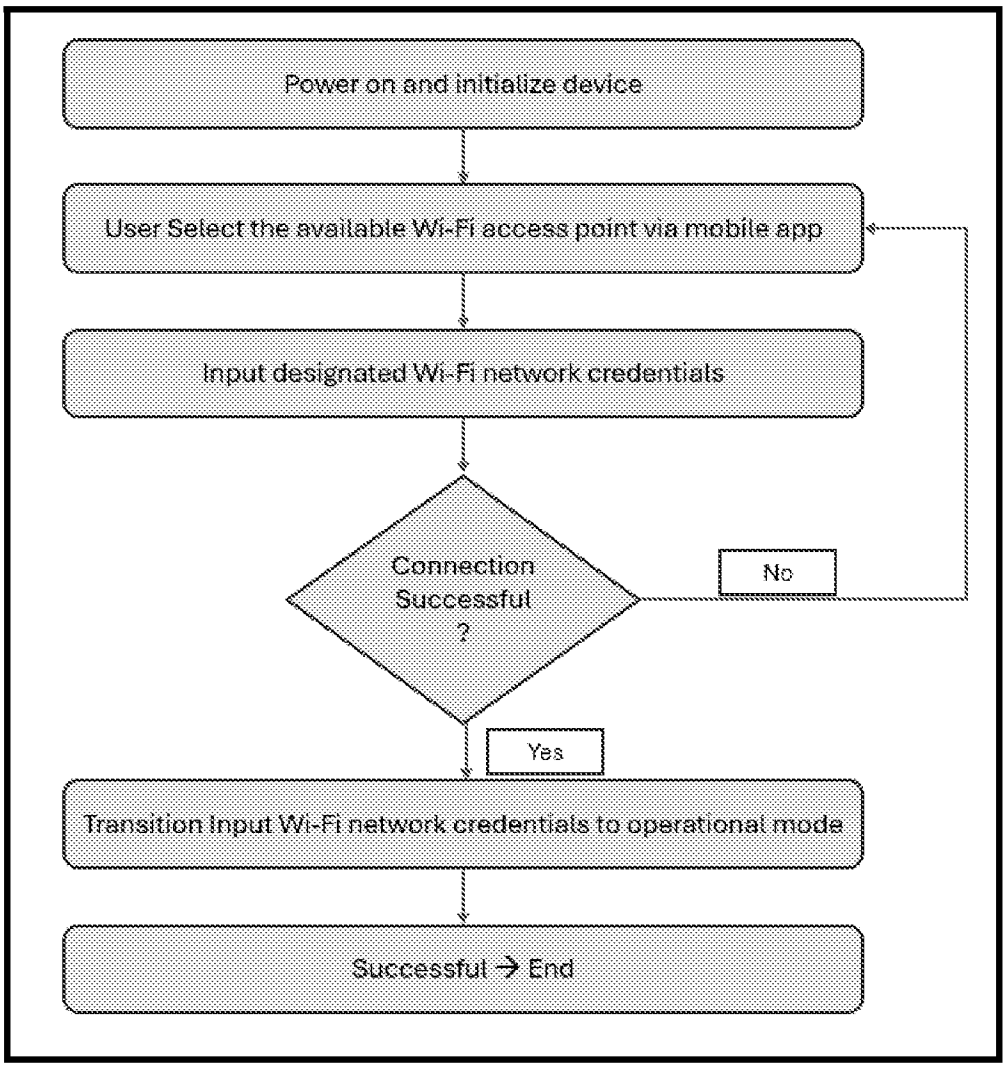

Figure 3. Initial setup and WiFi connection establishment process

A user interface mockup of the software application, highlighting key features and controls. This figure showcases the main screens of the mobile application:

- The home screen with device status and quick-access controls
- The setup wizard interface for initial configuration
- The image transfer status screen, shows progress bars and file details
- The cloud storage management interface
- The AI analysis settings page Each screen is annotated to explain key features and how they relate to the system's functionality. The mockup demonstrates the app's intuitive design and user-friendly interface.

Figure 4: A diagram illustrating the data flow from image capture to cloud storage and AI analysis. This comprehensive diagram traces the path of an image from the moment it's captured:

1. Image capture by DSLR camera
2. Transfer to the hardware device via USB/AV connection
3. Processing and temporary storage in the device
4. Wireless transmission to the cloud storage platform
5. Reception and storage in the cloud
6. AI analysis process initiation
7. Results of AI analysis fed back into the storage system

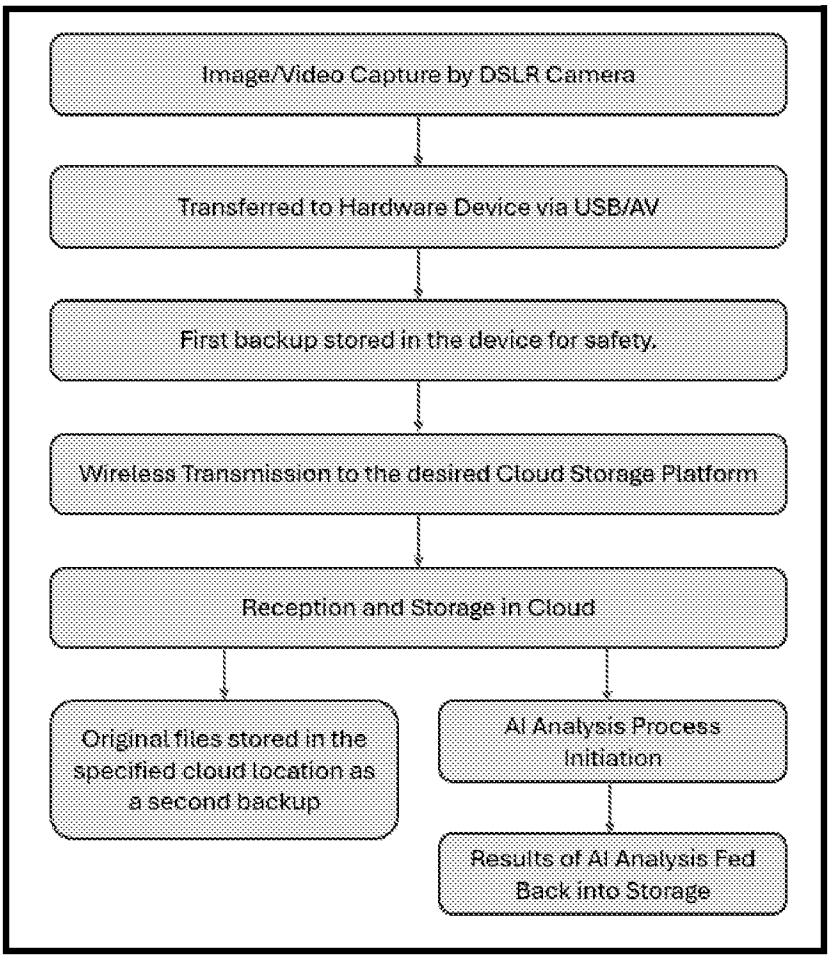

Figure 4. Schematic diagram for the data flow from image capture to cloud storage and AI analysis

Arrows and numbered steps clearly show the sequence and direction of data movement. The diagram also indicates where encryption is applied to ensure data security.

Figure 5: A flowchart representing the AI-based image rating and categorization process. This detailed flowchart breaks down the AI analysis process:

1. Image receipt in the cloud storage
2. Initial image processing and format standardization
3. Parallel processes for different types of analysis: a. Technical quality assessment (blur detection, exposure analysis) b. Content categorization (scene type, subject matter identification) c. Aesthetic evaluation based on composition rules and color harmony
4. Aggregation of analysis results
5. Assignment of overall rating and categories
6. Storage of analysis results with the image metadata

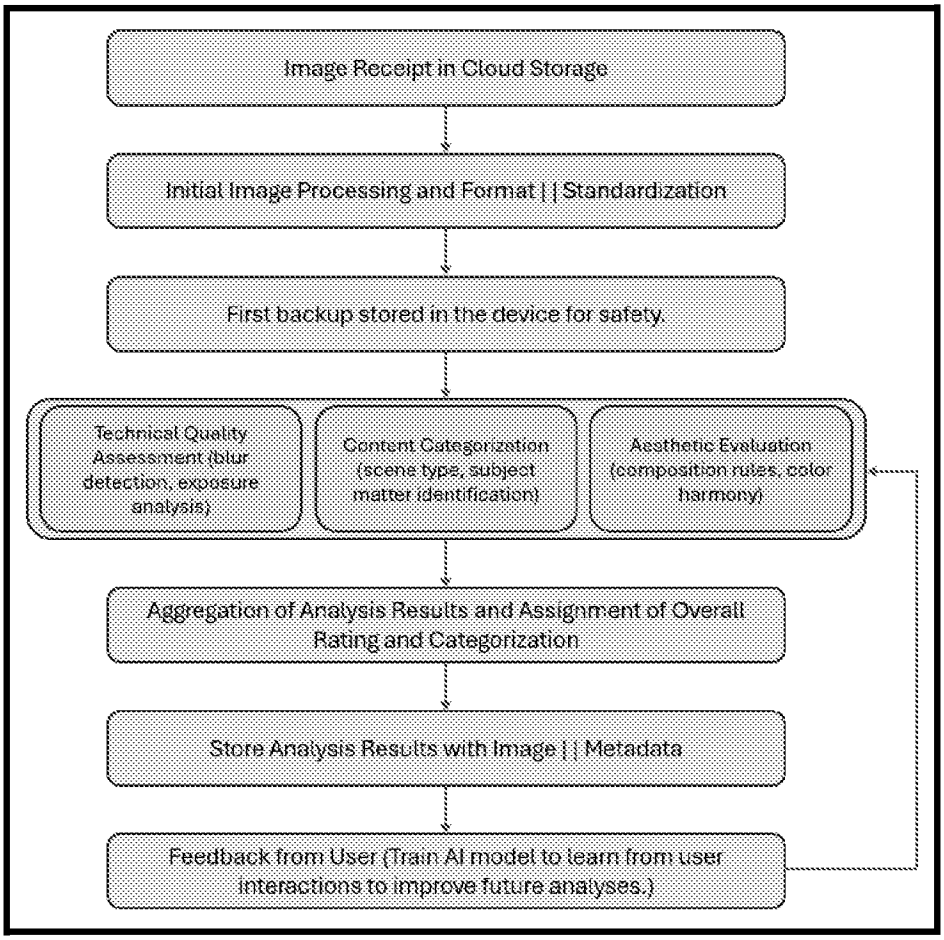

Figure 5. AI-based image rating and categorization process

These detailed drawings provide a comprehensive visual representation of the Real-Time Camera-to-Cloud Image Transfer and Analysis System, illustrating its components, processes, and user interfaces. They serve to clarify the system's operation and highlight its innovative features, supporting the textual description in the patent application.

4. Detailed Description of the Invention:

The Real-Time Camera-to-Cloud Image Transfer and Analysis System is an innovative solution designed to revolutionize the workflow of digital photographers with its Retrofit compatibility with all the Cameras since 2001. It comprises three main components: a hardware device, a software application, and a cloud storage solution with integrated AI capabilities. These components work in harmony to provide a seamless, efficient, and intelligent system for image capture, transfer, storage, and analysis.

1. Hardware Device:

The hardware device is the cornerstone of the system, serving as the bridge between the camera and the cloud storage. It is a Retro fit devicewith a universal hot shoe mount compatibility designed with portability, durability, and versatility in mind.

Physical Characteristics:

- Dimensions: Approximately 300mm x 60mm x 20mm, making it pocket-sized and easy to carry.
- Weight: Less than 350 grams, ensuring it doesn't add significant bulk to a photographer's kit.
- Enclosure: Constructed from high-impact, weather-resistant polycarbonate with an IP67 rating, protecting against dust and water ingress.
- Operating Temperature Range: -20°C to 50°C, suitable for various shooting environments.

Key Components:

a) Processor:

- High-performance, low-power processor, with dedicated image processing unit for efficient handling of image data.
- Real-time operating system for responsive and reliable operation.

b) Memory:

- 1GB LPDDR4 RAM for smooth multitasking and data buffering.
- 8 GB eMMC flash storage for firmware, settings, and temporary image storage.
- Expandable storage via microSD card slot, supporting up to 512GB for additional capacity.

c) Connectivity:

- WiFi Module: • Dual-band 802.11ac (WiFi 5) supporting 2.4GHz and 5GHz frequencies. • Maximum theoretical speed of 867 Mbps for rapid image transfer. • WPA3 encryption support for enhanced security.
- USB Port: • USB 3.1 Gen 1 Type-C port for high-speed camera connection. • Supports USB OTG for direct connection to mobile devices if needed. • Backward compatible with USB 2.0 for older camera models.
- AV Port: • 3.5mm TRRS jack supporting composite video and stereo audio. • Enables connectivity with cameras that use AV output for data transfer.

d) Power Management:

- Battery: • 5000mAh Li-Po rechargeable battery. • Provides up to 12 hours of continuous operation. ////// • Hot-swappable design allows for battery replacement without interrupting operation.
- Charging Port: • USB-C port supporting USB Power Delivery up to 18W. • Fast charging capability: 0 to 80% in 45 minutes. • Pass-through charging allows simultaneous device operation and battery charging.
- Power Management Circuitry: • Intelligent power distribution system optimizes energy use between components. • Low-power modes for extended battery life during idle periods. • Overcharge, over-discharge, and overheating protection circuits for safety.

e) Additional Hardware Features:

- Status LEDs: Multi-color LEDs indicate power, connectivity, and transfer status at a glance.
- Physical Controls: Power button and function button for manual control without the app.
- Cooling: Passive cooling system with internal heat spreaders to maintain optimal operating temperature.

A. Operational Flow:

1. Initial Setup:

1.1. Upon first power-on, the device enters configuration mode.

1.2. It creates a secure, temporary WiFi network with a unique SSID (e.g.,"CloudTransfer_XXXX").

1.3. The mobile app connects to this network to provide setup information.

2. Network Connection:

2.1. The device receives WiFi credentials through the secure setup channel.
2.2. It then connects to the specified network using WPA2 or WPA3 encryption.
2.3. The device performs a connection quality test, optimizing for the fastest available band.

3. Camera Connection:

3.1. The user connects their DSLR camera using the USB or AV port.
3.2. The device employs a universal camera detection protocol, identifying the make and model.
3.3. It loads the appropriate driver and communication protocol from its internal database.
3.4. A handshake process confirms successful connection and readiness for data transfer.

4. Data Transfer Process:

4.1. When initiated, the device monitors the camera's output for new images.
4.2. Upon detecting a new image:
  4.2.1. The device rapidly transfers the image to its internal memory.
  4.2.2. It performs a quick integrity check to ensure complete and uncorrupted transfer.
  4.2.3. The device immediately begins uploading the image to the cloud storage.
  4.2.4. Simultaneous to upload, it prepares the next image for transfer if available.
4.3. The device employs a proprietary queuing system to manage multiple images efficiently.

5. Security Measures:

5.1. All data transferred from the camera to the device is checked for integrity.
5.2. Images are encrypted using AES-256 encryption before transmission to the cloud.
5.3. The device regularly updates its firmware to patch any security vulnerabilities.

6. Network Resilience:

6.1. In the event of a sudden network breakdown, the device automatically terminates the uploading process.
6.2. Once the network is regained or reconnected, the device continues the upload from the point where it stopped.

2. Software Application:

The software application is the user's primary interface for controlling the system. It is designed for iOS and Android platforms, offering an intuitive and feature-rich experience.

Key Features and Functionalities:

a) Device Setup and Management:

- Guided setup process for first-time users.
- WiFi network management, allowing multiple network configurations.
- Firmware update management for the hardware device.

b) Camera Connection:

- Retrofit device capable of connecting to any camera manufactured from 2001 to the present.
- Real-time status display of camera connection.
- Camera settings adjustment interface (when supported by the camera model).
- Remote shutter control for supported cameras.

c) Upload Control:

- Single-touch start/stop for the automatic upload process.
- Batch upload options for selecting multiple existing images.
- Priority queue management for urgent transfers.

d) Cloud Storage Configuration:

- Integration with multiple cloud storage providers (e.g., Google Drive, Dropbox, iCloud).
- Custom folder creation and management.
- Automatic folder structures based on date, location, or custom tags.

e) Transfer Status and History:

- Real-time progress bars for individual and overall transfers.
- Transfer history log with searchable and filterable entries.
- Bandwidth usage monitoring and control options.

f) AI Analysis Settings:

- Customizable parameters for image quality assessment.
- Training mode for personalizing AI categorization to user preferences.

- Threshold adjustments for automated culling of subpar images.

g) Image Preview and Basic Editing:

- Quick view of transferred images with zooming capability.
- Basic editing tools (crop, rotate, adjust exposure) for urgent modifications.
- EXIF data viewer for detailed image information.

h) Notification System:

- Customizable alerts for transfer completions, errors, and AI analysis results.
- Integration with mobile OS notification systems for seamless updates.

i) Offline Mode:

- Queuing of transfer tasks when internet connectivity is lost.
- Automatic resumption of transfers when the connection is restored.

j) User Account Management:

- Secure login with a two-factor authentication option.
- Subscription management for cloud storage and AI features.
- Usage statistics and storage quota information.

3. **Cloud Storage and AI Analysis:**

The cloud component of the system provides secure storage and intelligent analysis of uploaded images.

Key Features:

a) Secure Storage:

- End-to-end encryption for all data transfers.
- At-rest encryption using AES-256 for stored images.
- Regular security audits and compliance with data protection regulations (e.g., GDPR, CCPA).

b) AI Image Analysis:

- Quality Assessment:
    - Multi-factor analysis including focus sharpness, exposure, color balance, and noise levels.
    - Detection of common issues like camera shake, motion blur, and chromatic aberration.
    - Custom quality thresholds based on user-defined standards.

- Content Categorization:
    - Deep learning algorithms for scene recognition (e.g., landscape, portrait, action, wildlife).
    - Object detection for content-based tagging.
    - Facial recognition capabilities (with user permission) for people-based organizations.

- Rating System:
    - Composite scoring based on technical quality and predicted aesthetic appeal.
    - Learning algorithm that adapts to individual photographer's style and preferences over time.
    - Integration of metadata (e.g., lens used, camera settings) in the rating process.

c) Organization:

- Automatic folder creation based on shoot date, location, recognized events, or AI-determined categories.
- Smart albums that dynamically update based on user-defined criteria or AI analysis results.

- Tagging system that combines AI-generated and user-defined tags for powerful searching and sorting.

d) Access Control and Sharing:

- Granular permissions settings for shared folders or individual images.
- Temporary access links with expiration dates for client previews.
- Integration with popular social media platforms for direct sharing.

e) Version Control and Backup:

- Automatic versioning of edited images while preserving originals.
- Redundant storage across multiple geographic locations for data safety.
- Configurable backup schedules to secondary cloud services.

f) API and Integration:

- RESTful API for integration with third-party editing software and asset management systems.
- Webhook support for triggering automated workflows upon image upload or analysis completion.

g) Scalability and Performance:

- Cloud infrastructure is designed to handle high-volume uploads from multiple users simultaneously.
- Content Delivery Network (CDN) integration for fast image loading worldwide.
- Adaptive bitrate streaming for efficient delivery of high-resolution images and videos.

This comprehensive system represents a significant advancement in digital photography workflow, offering photographers a powerful, efficient, and intelligent solution for managing their digital assets from capture to delivery.

5. Summary of the Invention:

The present invention, entitled "Real-Time Camera-to-Cloud Image Transfer and Analysis System," introduces a revolutionary solution for digital photography workflow. This system seamlessly integrates hardware, software, and cloud-based artificial intelligence to provide photographers with an efficient, secure, and intelligent method for capturing, transferring, storing, and analyzing digital images and videos.

The invention comprises three primary components:

1. Hardware Device: The core of the system is a compact, ruggedized hardware device designed to interface with a wide range of DSLR cameras. Key features include:
- Dual connectivity options via USB 3.1 Gen 1 Type-C and AV ports, ensuring compatibility with various camera models.
- High-performance, low-power ARM Cortex-A53 quad-core processor for efficient data handling and image processing.
- 1GB LPDDR4 RAM and 512GB eMMC flash storage, with expandable storage via microSD.
- Advanced connectivity modules including dual-band 802.11ac WiFi and Bluetooth 5.0.
- 5000mAh Li-Po rechargeable battery provides up to 8 hours of continuous operation.
- Durable, weather-resistant enclosure with an IP67 rating for use in challenging environments.

The device operates through a sophisticated process: a) Upon initial setup, it creates a secure, temporary WiFi network for configuration. b) It then connects to the user's specified WiFi network using robust encryption protocols. c) Once connected to a camera, it automatically detects the model and configures appropriate communication protocols. d) When activated, it continuously monitors for new images, instantly transferring them to internal memory before initiating the cloud upload process.

2. Software Application: A user-friendly mobile application serves as the control center for the system, available for both iOS and Android platforms. Its key functionalities include:
- Intuitive device setup and WiFi network management.
- Real-time monitoring of camera connection status and transfer progress.
- Granular control over the upload process, including start/stop functionality and priority queuing.
- Comprehensive cloud storage configuration options.
- Customizable AI analysis settings for personalized image assessment.
- Basic image preview and editing capabilities for urgent modifications.
- Advanced notification system for transfer completions, errors, and AI analysis results.
- Offline mode for queuing transfers when internet connectivity is unavailable.

3. Cloud Storage and AI Analysis Component: This component provides secure storage and intelligent analysis of uploaded images:

- End-to-end encryption for data transfers and at-rest encryption for stored images.
- Multi-faceted AI image analysis including: a) Quality assessment: Evaluating focus sharpness, exposure, color balance, and noise levels. b) Content categorization: Employing deep learning algorithms for scene recognition and object detection. c) Rating system: Generating composite scores based on technical quality and predicted aesthetic appeal.
- Intelligent organization features, including automatic folder creation and smart albums.
- Granular access control and sharing capabilities.
- Version control and redundant backup systems.
- API support for integration with third-party software and workflows.

The system operates as follows:

1. The user connects the hardware device to their DSLR camera and initiates the upload process via the mobile application.
2. As the photographer captures images, the device instantly transfers each new image to its internal memory.
3. The device then immediately begins uploading the image to the cloud storage, employing encryption protocols to ensure data security.
4. Upon reaching the cloud storage, the image undergoes AI analysis for quality assessment, content categorization, and rating.
5. The analyzed and categorized image is then organized within the cloud storage system based on AI-determined factors and user preferences.
6. Real-time updates on transfer progress and analysis results are sent to the mobile application.

This invention significantly enhances the digital photography workflow by providing:

- Immediate off-camera backups, reduce the risk of data loss.
- Real-time transfer to cloud storage, enabling faster delivery to clients or publication.
- AI-driven image analysis and organization, saving time in the post-production process.
- Secure and redundant storage solutions, protecting valuable photographic assets.
- Seamless integration with existing photographic equipment and workflows.

By automating and optimizing these critical aspects of digital image management, this system allows photographers to focus more on their creative process while ensuring their work is securely stored, efficiently organized, and rapidly accessible. It represents a significant advancement in photographic technology, addressing the growing needs of both professional and amateur photographers in an increasingly fast-paced and data-driven visual world.