How can artificial intelligence improve commercial photography?

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Abstract:

The integration of artificial intelligence (AI) in commercial photography represents a significant shift in how images are captured, processed, and utilized for marketing and branding purposes. This research explores the multifaceted impact of AI technologies, image recognition, and automated editing tools on the commercial photography industry. The study examines how AI is enhancing the creativity in commercial photography. Key findings highlight AI's role in streamlining workflows, improving image quality, and enabling hyper-targeted content creation. Additionally, the research addresses the ethical considerations and potential challenges associated with AI in photography, such as issues of authenticity and the displacement of traditional photographic skills. The importance of the research lies in studying the applications of artificial intelligence and its usage in commercial photography, and its contribution to developing and improving the product photography to reach the highest level of quality, mastery, and distinction. This comprehensive analysis aims to provide a nuanced understanding of AI's transformative effects on commercial photography and offer insights into future developments in the field.

Key words:
Artificial intelligence, Commercial photography, Product photography

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- **Research Problem**

As artificial intelligence (AI) increasingly integrates into commercial photography, it transforms traditional practices and raises critical questions about its impact on the industry. The central research problem is: How does the implementation of AI technologies in commercial photography affect the creative process and ethical considerations within the industry?

- **Aim of the research:**

This research aims to monitor and employ artificial intelligence applications in improving the commercial photography, as it provided smarter, more advanced, and faster tools for making fundamental adjustments and improvements to the photographic image, whether in up editing, scaling, processing (generating).

- **Research importance:**

Artificial intelligence (AI) is transforming various aspects of product photography, from image editing to content creation. Commercial photography, which involves producing images for advertising, marketing, and branding purposes.

- **Research field :**

Product Commercial photography

- **Research Methodology:**

The research follows on the descriptive approach in describing the tools that used in producing a creative commercial photograph and followed the applied study in creating applications on commercial photographs and processing them by using artificial intelligence applications and tools to achieve the best results on product photography.

Frequently asked questions.

- Is Generative Fill free?
- What is Generative Fill in Photoshop?
- What can you use Generative Fill for?
- Which Photoshop version has Generative Fill?
- Is Generative Fill designed to be safe for commercial use?
- Will I have a copyright interest in what I generate with Generative Fill?

Previous studies

1. **Artificial Intelligence Applications in Photography, published in the International Design Journal, (Hesham Marei, 2020)**

   This study includes how to use artificial intelligence applications in photography to obtain a photograph with the least time and effort. Whether in the photography stage, or in the image processing and enhancement stage, as well as in generating and creating photographs. It did not address the study of artificial intelligence applications and tools and their role in developing commercial photography.

2. **Astudy of Modern Techniqes of food Advertising Photo Production ,published thesis , (Yasmin Naser, 2021)**

This study includes how to obtain food Advertising Photo Production and It did not address the study of artificial intelligence applications and tools and their role in developing commercial and advertising photography.

Introduction:

The incorporation of AI into professional digital photography editing in the 1960s has evolved into the sophisticated AI-based tools of today. The history of AI in digital photography editing is characterized by technological advances, increasing accessibility, and the emergence of new artistic possibilities with AI-assisted digital photography and video enhancement the famous GIF, generates advanced digital arts using the latest technological methods. **(P. Harsanto and J. Jakti, 2023)**

Nowadays, photographic technology has become increasingly mature and widely used in various business activities. From traditional commercial photography to the high value of commercial photography in the advertising field has gradually increased.

Product photography is one of the most popular forms of information that is used in advertising fields, but digital editing applications modify the product photography without leaving any trace, which poses technical and artistic problems. Therefore, the need for an automated system to detect and extract the real image that exists well depends on the availability of the original image from the given image, and therefore

adding or removing objects and parts from digital images is one of the major concerns for research and information security.

Digital photography can contain many subjects added or subtracted, including backgrounds, signatures, rectangles, or emojis so adding or removing these subjects can change the connotations of digital photography. **(Meyer, 2024)**

Artificial Intelligence aims to transform manual, uninspiring, and often time-consuming tasks into semi-automated procedures, by using several AI software, which helps in avoiding processing each file manually.

Artificial intelligence software in photographic image processing relies on four main axes:
Image upscaler, Image editing, Image generation, so the major AI photo editing software features in apps are:

- Upscaling and sharpening low-resolution or blurry images.
- Copy and transfer images.
- Detecting whether you took a portrait, a landscape, or some other kind of photo and suggesting appropriate edits or tools.
- Cutting your subject out from the background with a single click.
- Replacing the sky with a different one and matching the lighting in the rest of the image.
- Automatically making simple adjustments to light levels, exposure, colors, and contrast.
- "Improving" faces by smoothing skin, brightening eyes, and making other tweaks.
- Repairing or colorizing old black-and-white photos.
- Selecting or masking your subject, so you can make hands-on edits. **(Stephen Nellis , 2024)**

- **Commercial Photography**

Commercial Photography is a wide term that refers to images used to promote or sell a product or service, or to support a business, organization or influencer. Depending on the industry they are used in, it can also be called product photography, food photography, fashion photography, architectural photography, real estate photography, event photography or lifestyle photography.

Currently, most sales and advertising are done online, therefore commercial photos are often shot with social media in mind. But they can also be used in catalogs, websites, print and digital ads, business cards, or billboards.

(Jeff Johnson, 2023)

- **Different Types of Commercial Photography**
- **Product Photography**

Product Photography deals with capturing the images of products or services and using them on websites and social media platforms to drive sales.

Examples of commercial product photography that are used in e-commerce are the images which being sold on online retail websites such as Amazon.

(Figure 1) Product Photography

- **Fashion Photography**

Fashion photography is dedicated to showcasing clothing or fashion-related items intended to sell.

(Figure 2) Fashion Photography

- **Food Photography**

It is an area of photography that creates attractive food photos to appeal to the viewer.

(Figure 3) Food Photography

- **Lifestyle Photography**

In lifestyle photography, an image is created showcasing a product or service often integrated into the subject's lifestyle.

(Figure 4) Lifestyle Photography

(Jeff Johnson, 2023)

- **Advertising Photography**

This genre of photography captures images of products or services for promotion purposes. Hence it is used on billboards, posters, magazine pages, online adverts, product catalogs, etc.

(Figure 5) Advertising Photography

- **Portrait Photography**

This genre of photography focuses on capturing the personality of a person or group of people.

(Figure 6) Portrait Photography

- **Architecture Photography**

A genre of photography that focuses on capturing photographs of buildings or structures

(Figure 7) Architecture Photography

- **Real Estate Photography**

A real estate photographer creates eye-catching visuals of properties and interiors.

(Figure 8) Real Estate Photography

(Jeff Johnson, 2023)

Artificial intelligence (AI)

Artificial intelligence is a machine like a computer that has intelligence like humans. Artificial Intelligence computer machines can carry out orders that humans can carry out Furthermore, Utami (2021) said that artificial intelligence is a technology that allows computer systems, software, programs, and robots to "think" intelligently like humans.

Humans create the artificial intelligence of a machine through complex programming algorithms. Artificial intelligence is a technology that makes it possible to create replicas of human intelligence that can be embedded into systems. Systems that show characteristics of thinking like humans and even enable them to do tasks better than humans (are important to study because this artificial intelligence can do some jobs faster and better than natural intelligence).

(P. Harsanto and J. Jakti, 2023)

Artificial intelligence is used in several axis of photography so the most important axis in commercial photography

- **First: AI image upscaler**
- **Second: Image Editing**
- **Third: Image background Generation**

First: AI image upscaler

An AI image upscaler uses artificial intelligence algorithms to enlarge or "upscale" an image, improving its resolution without a significant loss in quality. Unlike traditional methods, which often result in blurriness, AI models analyze the low-resolution image and predict the

details that would exist in a higher-resolution version. They "learn" from extensive datasets to extrapolate additional information from the pixels of the lower-quality image, resulting in an upscaled image with much of the sharpness, clarity, and detail of a high-resolution photograph.

(Gwira, 2023)

(Figure 9) AI image upscaler

The Most Important Applications of AI image upscaler.

- Gigapixel AI
- Upscale.media
- AVCLabs Photo Enhancer AI
- DeepImage AI

Second: Image Editing

AI is revolutionizing image editing by enhancing quality, efficiency, removing or adding background and creativity. AI blends technology and art, shaping the future of digital imaging.

(Harry Guinness · August 11, 2023)

(Figure 10) Image Editing

The Most Important Ai Tools & Applications of Image Editing and AI Background Removers in commercial photography:

The best AI background remover helps create professional images for websites or social media.

Removing background images makes it easier to draw more engagement to the product and improves SEO. **(Bhavna, 2021)**

- **Pixel cut**
- **Removal.AI**
- **AI background remover.**
- **RemoveBG**
- **AI generated product backgrounds**
- **Adobe Firefly**
- **Adobe Photoshop**
- **Pixlr**
- **Topaz Studio**
- **Luminar AI**
- **Aurora HDR**
- **Object AI**
- **Canva**
- **HotPot AI**

Third: Image Generation

AI technology that is used to create or generate new images by learning patterns from existing data is commonly known as an AI image generator. Other technical names for such an image generator are AI-powered image synthesis tools. (Miguel Rebelo · May 3, 2023)

(Figure 11) Image Generation

The Most Important Applications of Image Generation

- Midjourney
- Adobe Firefly as a Generator App
- DALL·E 3
- Stable Diffusion with DreamStudio
- Starry AI
- Deep Dream

(Ryan Kane · October 23, 2023)

The usage of AI for Commercial Photography

- **Automated photo editing:**

Many modern software uses AI to analyze images and apply automatic adjustments such as adjusting brightness and contrast, removing blemishes, and correcting colors. For example, software such as Adobe Photoshop and Lightroom have AI-powered features to speed up the editing process. **(AI Photo Editing with Photoshop - Adobe, n.d.)**

- **Intelligent selection and classification:**

AI can analyze large amounts of images and select the best ones based on certain criteria such as composition, lighting, and color vibrancy. This helps photographers save time in selecting the final images to be delivered to clients.

- **Creating images from scratch:**

Using generative models such as DALL-E, high-quality commercial images can be generated based on text descriptions alone. This opens the door to the possibility of creating customized images without the need for actual photo shoots.

- **Data analysis and trend prediction:**

AI can analyze data related to market trends and forecasts, helping commercial photographers identify the most popular patterns and develop effective marketing strategies.

- **Automating routine tasks:**

AI can automate routine tasks such as cropping images, removing backgrounds, and editing images in bulk. This allows photographers to focus on the more creative aspects of their work.

- **Image recognition and content analysis:**

AI can analyze image content to identify key elements such as products, faces, and environments, helping to organize content and provide personalized recommendations to customers.

- **Improving customer experience:**

AI can provide personalized experiences to customers through personalized recommendations based on an analysis of their preferences and previous image usage.

(AI Photo Editing with Photoshop - Adobe, n.d.)

Advantages and disadvantages of artificial intelligence in commercial photography

Advantages of AI in Commercial Photography

Increased Efficiency:

- **Automated Editing:** AI tools can handle repetitive tasks like color correction, background removal, and retouching quickly, freeing up time for photographers to focus on creative aspects.
- **Batch Processing:** AI can edit multiple images at once, which is especially useful for large projects, speeding up the workflow.

Enhanced Creativity:

- **Creative Suggestions:** AI can propose innovative compositions, styles, or edits that photographers might not have considered, pushing creative boundaries.
- **Generative Art:** AI models like DALL-E can create unique images based on text descriptions, offering entirely new forms of visual content.

Improved Image Quality:

- **Smart Enhancements:** AI can enhance image quality by sharpening details, reducing noise, and correcting distortions, resulting in high-quality final products.
- **Precision Retouching:** AI can make detailed adjustments to specific areas of an image, such as skin retouching, without affecting other elements.

Personalization:

- **Custom Content:** AI can analyze client preferences and tailor edits or compositions to meet specific needs, leading to more personalized results.
- **Adaptive Learning:** AI learns from previous projects, improving its ability to deliver on client expectations over time.

Cost-Effectiveness:

- **Reduced Labor Costs:** By automating many editing and processing tasks, AI lowers the need for manual labor, reducing overall costs. **(Heba El-aasy ,2023)**
- **Fewer Reshoots:** AI can correct many issues in post-production, often eliminating the need for expensive and time-consuming reshoots. **(Heba El-aasy ,2023)**

Disadvantages of AI in Commercial Photography

Loss of Creative Control:

- **Over-Reliance on Automation:** Excessive use of AI tools can lead to a loss of personal touch and unique style, as the creative process becomes more automated.
- **Generic Results:** AI-generated content may sometimes lack the depth and creativity that comes from human intuition and experience.

Job Displacement:

- **Reduced Demand for Traditional Skills:** As AI takes over routine tasks, there may be less demand for skilled photo editors, potentially leading to job losses in certain areas.
- **Skill Degradation:** Over-reliance on AI could lead to a decline in the development and practice of essential photography and editing skills.

High Initial Costs:

- **Investment in Technology:** Implementing AI tools often requires a significant initial investment in software, hardware, and training, which may not be feasible for all photographers.
- **Ongoing Maintenance:** AI systems require regular updates and maintenance, adding to long-term costs.

Ethical Concerns:

- **Authenticity Issues:** AI can easily alter or create images, raising concerns about the authenticity and trustworthiness of visual content in commercial photography.
- **Intellectual Property:** The use of AI-generated images can lead to legal and ethical questions regarding ownership and copyright.

Dependence on Technology:

- **Technical Failures:** Relying heavily on AI tools can be risky if the technology fails or produces errors that are difficult to detect or correct. **(Stephen Nellis , 2024)**
- **Limited Understanding:** AI may not always understand the context or nuances of a project, leading to inappropriate or suboptimal edits.

Creative Stagnation:

- **Homogenization of Content:** As AI tools become more widespread, there's a risk that commercial photography will become homogenized, with many images looking similar due to the use of the same AI algorithms.
- **Inhibition of Experimentation:** Photographers might become less inclined to experiment with new techniques if they rely too heavily on AI for results.

(Stephen Nellis , 2024)

The Application models by the researcher for photographing and processing products by using artificial intelligence (Flair ai application) and Adobe Photoshop

(Flair ai application): https://app.flair.ai/

(Table 1) The Comparison between Editing by using Application Flair ai and Adobe Photoshop 2021 to the same products by the Researcher

The original photos	Application Flair ai Edit	Adobe Photoshop 2021 Edit
 (Figure 12) (The original photo) vase (1) (product photography) without editing	 (Figure 13) Result (1) for vase (1) (product photography) editing by using Application Flair ai	 (Figure 14) Final result vase (1) (product photography) editing by using Adobe Photoshop 2021
	 (Figure 15) Result (2) vase (1) (product photography) editing by using Application Flair ai	 (Figure 16) Props mockup for vase (1) (product photography) editing by using Adobe Photoshop 2021

	 (Figure 17) Result (3) vase (1) (product photography) editing by using Application Flair ai	 (Figure 18) Props mockup – add shadows for background of vase (1) (product photography) editing by using Adobe Photoshop 2021
	 (Figure 19) Making of Designing vase (1) (product photography) editing by using Application Flair ai	 (Figure 20) Making of Designing vase (1) (product photography) editing by using Adobe Photoshop 2021
 (Figure 21) (The original photo) vase (2) (product photography) without editing	 (Figure 22) Result (1) for vase (2) (product photography) editing by using Application Flair ai	 (Figure 23) Final result vase (2) (product photography) editing by using Adobe Photoshop 2021

(Figure 24) Result (1) for vase (2) (product photography) editing by using Application Flair ai

(Figure 25) Props mockup for vase (2) (product photography) editing by using Adobe Photoshop 2021

(Figure 26) Result (1) for vase (2) (product photography) editing by using Application Flair ai

(Figure 27) Props mockup – add shadows for background of vase (2) (product photography) editing by using Adobe Photoshop 2021

(Figure 28) Making of Designing vase (2) (product photography) editing by using Application Flair ai

(Figure 29) Making Designing vase (2) (product photography) editing by using Adobe Photoshop 2021

(Figure 30) The Best two results of the product photography by using Application Flair ai

Research Results

1. Enhanced Image Quality

- Noise Reduction: AI algorithms can effectively reduce noise and artifacts in images, leading to cleaner and more professional-looking product photos.
- Resolution Enhancement: Techniques such as Super-Resolution use AI to upscale images without losing detail, allowing for high-quality prints and close-ups.

2. Automatic Image Correction

- Color Correction: AI tools can automatically adjust colors to match real-life products more accurately, compensating for lighting issues and color distortions.
- Exposure and Contrast: AI-driven photo editors can correct exposure levels and contrast, ensuring that product details are well-highlighted and visible.

3. Object and Scene Recognition

- Object Detection: AI can identify and label objects within images, which aids in organizing and categorizing product photos more efficiently.
- Background Removal: AI algorithms can automatically remove or replace backgrounds, allowing for clean and consistent product images.

4. Efficient Workflow Automation

- Batch Processing: AI tools can handle large volumes of images simultaneously, applying consistent edits across multiple photos, thus speeding up the editing process.
- Predictive Editing: AI can predict the most appropriate edits based on previous inputs and user preferences, reducing manual adjustments.

5. Customizable Product Presentation

- Virtual Staging: AI can place products in various virtual environments or settings, allowing for diverse presentations without the need for physical staging.
- Dynamic Backgrounds: AI tools can generate or replace backgrounds dynamically, tailored to different marketing campaigns or product themes.

6. Improved Accuracy in Detailing

- Defect Detection: AI can identify defects or inconsistencies in product photos, such as scratches or imperfections, which can be crucial for quality control.
- Enhanced Focus: AI-driven sharpening techniques enhance details and textures in product images, making them more appealing to customers.

7. Cost and Time Efficiency

- Reduced Editing Time: By automating repetitive tasks and applying consistent edits, AI reduces the time and cost associated with manual photo editing.
- Lowered Labor Costs: With AI handling complex and time-consuming editing tasks, companies can allocate resources more effectively.

Research recommendations of AI photo editing for product photography

- Using and exploiting artificial intelligence tools in digital photography processing
- Reviewing the results of artificial intelligence modifications in digital photography processing and ensuring that they meet the standards required by the photographer.

- AI-powered tools and features can help speed up the photo editing process and improve the quality of your photos, allowing you to focus more on the creative aspects of product photography.

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كيف يمكن للذكاء الاصطناعي تحسين التصوير التجاري؟

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المستخلص:

يعد دمج الذكاء الاصطناعي بالتصوير التجاري تحولاً كبيراً في كيفية التقاط الصور التجارية ومعالجتها واستخدامها لأغراض التسويق والعلامات التجارية. يقوم هذا البحث بدراسة تطبيقات الذكاء الاصطناعي وأدوات المعالجة الآلية وتأثيرها على التصوير الفوتوغرافي التجاري، ويتناول كيفية تعزيز الذكاء الاصطناعي للإبداع الفني في التصوير الفوتوغرافي التجاري. ويعد من أبرز النتائج الرئيسية هو دور الذكاء الاصطناعي في تبسيط عملية المعالجة للصورة التجارية وتحسين جودها لتمكين المصور من إنشاء محتوى تجاري له هدف. بالإضافة إلى ذلك، يتناول البحث الاعتبارات والتحديات المرتبطة بالذكاء الاصطناعي في التصوير الفوتوغرافي التجاري، مثل التعديل على الصورة الاصلية ومعالجتها من خلال إضافة وإزالة الاشاء منها باستخدام أدوات الذكاء الاصطناعي بدلا من طرق المعالجة التقليدية لانتاج صورة تجارية ابداعية. تكمن أهمية البحث في دراسة تطبيقات الذكاء الاصطناعي واستخدامها في التصوير الفوتوغرافي التجاري، ومساهمتها في تطوير وتحسين تصوير المنتجات للوصول إلى أعلى مستوى من الجودة والإتقان والتميز. كما يهدف البحث إلى توفير الوقت والجهد في انتاج صورة تجارية مبدعة وفهم التأثيرات التحويلية للذكاء الاصطناعي على التصوير الفوتوغرافي التجاري وتقديم رؤى حول التطورات المستقبلية في هذا المجال.

الكلمات المفتاحية: الذكاء الاصطناعي؛ التصوير الفوتوغرافي التجاري؛ تصوير المنتجات.