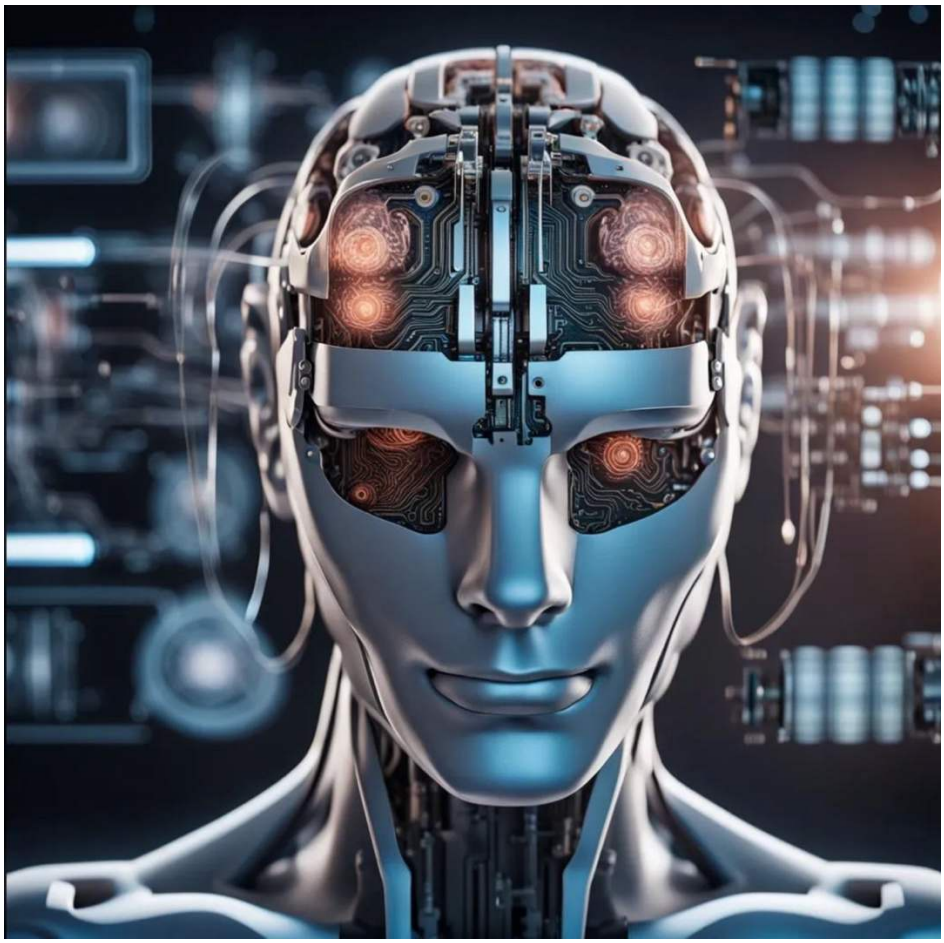
CAPA's Stance on AI-Generated Images in Photo Competitions



AI Generative 'text-to-image' Creation by Sheldon Boles

Introduction

The rapid advancement of AI-generative technology has raised concerns about its potential impact on the integrity of photographic competitions. To address this, the Canadian Association for Photographic Art (CAPA) has taken a proactive stance by outlining its position, guidelines, and rationale for safeguarding the authenticity and fairness of its photographic competitions.

Concerns Regarding AI-Generated Image

The decision to prohibit AI-generated images in photographic competitions stems from several critical concerns that challenge the core principles of photography.

1. **Unjustified Image Scraping and Corporate Profits** - AI image generators often scrape internet images without proper compensation to the original photographer or artists. This practise raises concerns about the ethical implications of profiting from these unsuspecting image creators. By entering a

prompt, the AI-generative created an image from elements contained in their AI dataset of scraped images.

2. **Copyright Challenges** - The unresolved nature of copyright issues surrounding AI-generated images underscores the need for clarity in distinguishing between "***intellectual property rights***" and "***fair usage***" within the scope of AI-generative technology. This complexity adds legal challenges that photographic societies and associations must navigate before considering the acceptance of AI-generated content. In the United States, several AI firms are being sued for copyright infringement and the matters are before the courts.

3. **Copyright Authorship of AI Generated Images** – Creators of AI-generative images are not receiving a copyright for their AI creations. United States Copyright Office's "***Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence***" document outlines why countries are apprehensive in issuing copyrights to AI-generated images. Their guidance document states:

   > *"Based on the Office's understanding of the generative AI technologies currently available, users do not exercise ultimate creative control over how such systems interpret prompts and generate material. Instead, these prompts function more like instructions to a commissioned artist—they identify what the prompter wishes to have depicted, but the machine determines how those instructions are implemented in its output.[i]"*
   >
   > *"When an AI technology determines the expressive elements of its output, the generated material is not the product of human authorship.[31] As a result, that material is not protected by copyright"*

   The majority of photographic societies and associations require that an entrant submitting an image into their competition must hold the copyright for their submitted image.

4. **Unfair Advantage** - Accepting AI generated images in a photographic competition would create an unfair advantage, as AI algorithms are capable of producing images at a faster rate or with more precision than human photographers.

Due to the unresolved concerns highlighted above, the recognition of AI-generated images as legitimate photographs in our competitions is contingent on the resolution of these issues. Until then, participants submitting AI-generative images engage in fraudulent practices by presenting ineligible images for in photographic competitions, which is both deceptive and unethical.

The Majority of photographic societies and associations worldwide have adopted a firm stance, explicitly prohibiting the submission of AI-generative images and photographs

enhanced with generative features. For instance, the Australian Photographic Society restricts such entries in their competitions:

> *Entrants must be the author of any image/s and all parts thereof submitted into an APS Competition.*
>
> *All parts of the image or images must have been 'photographed' by the author.*
>
> *'Content-aware Fill' or similar modification that is entirely based on pixels in the original image/s and which does not extend the image beyond its original boundaries is 'acceptable'.*
>
> *'Generative Fill' or other processes that use content generated by software from written prompts or developed from the work of others is 'not acceptable'.*
>
> **Question: *"Can I use Generative Fill, or similar, to create or remove an object (person, flora or fauna, building, scenery effect etc) in my image?"***
>
> - *This is not allowable if you use content generated by software from written prompts or developed from the work of others. For example:*
>
> - *Removing an 'unnecessary' tree that is replaced with existing associated imagery is allowable.*
>
> - *Removing a person and replacing them with a 'dog on a lead' is not allowable. Removing the background of an existing bush scene and using text asking for a 'beach background scene' to be added is not allowable.*
>
> - *Using generative fill to 'add a waterfall' to a scene where the waterfall is not part of an image taken by the photographer is not allowable.*
>
> - *Turning a summer scene into a winter scene that introduces snow that was not part of an image taken by the photographer is not allowable.*
>
> - *It is acknowledged that this is an area of rapid change and perhaps the most contentious"*

Another example reflecting a comparable stance is The International of Federation of Photographic Art (FIAP), which serves as the umbrella photographic organization consisting of 94 photographic societies and associations worldwide:

"Info 260/2023 states:

> *Pictures created by artificial intelligence are not allowed in salons under FIAP patronage. Therefore, salon organizers are asked to include the following text into the regulations of their events:*
>
> > *Pictures created by artificial intelligence are not allowed in this salon! It is reminded that all parts of the image have to be photographed by the author who is holding the copyright of all works submitted. Offenders will be sanctioned for life!"*

CAPA's Stance and Guidelines

In the Fall of 2023, we establish '*guard-rails*' designed to address potential submission of AI-generated text-to-image and photos enhanced with AI-generative technology:

1. *For the purposes of our competitions, a photographic image is defined "as being a captured image on a light-sensitive device (e.g. film camera, digital camera, smartphone, tablet, etc…) and recorded on film or in a digital format."*

2. *An artificial intelligence (AI) generated image is not deemed to be a photographic image because it was created from scratch by the AI system and contains no image captured by the photographer. Therefore, this type of image will not be accepted into our competitions.*

3. *Use of AI features contained within a post processing application (e.g. masking, sharpening, de-noise, enlarging, etc…) are permitted.*

4. *Images that involve the use of AI generative techniques like **in-painting** (where AI generates pixels to fill in missing parts or removes and replaces selected element from the original photograph then using replace it with pixel element from the AI's generative dataset) or **out-painting** (where the AI extends the image beyond its original boundaries by generating new elements) are not permitted for submission into CAPA competitions, regardless of whether text prompts were used or not.*

5. *Potential winning images may be required to have supporting images (sky, texture, etc…which must have been captured by the submitting photographer) submitted on request by the Director of Competitions.*

Furthermore, the Editing Criteria for all our competitions will be revised to include the following:

> *The Director of Competitions has the right to request and receive the original un-retouched JPEG or RAW file for a potential winning image in a competition for the purposes of verifying competition compliance.*
>
> *Upon notification that their image is a potential winning entry, photographers may be required by the Director of Competitions to submit all original images, such as unretouched JPG or RAW files, along with other image files that were integrated into the submitted image.*
>
> *Failure to comply with the Director's request for image files will result in the potential winning image being withdrawn from the competition and the competition results will be re-sorted.*

These requirements aim to ensure transparency and verify adherence to the competition's specifications regarding image authenticity and compliance with the editing criteria.

AI Technology Definitions and Permited AI Features

In recent years, many photo post-processing applications have incorporated Artificial Intelligence features in their products. The emergence of AI-generative technology has created uncertainty among photographers regarding the acceptability of different AI features.

To bring clarity to the realm of artificial intelligence, the following definitions are provided:

- **Artificial Intelligence (AI)** – This a branch of computer science dedicated to simulating human-like intelligence.

- **Machine Learning** – A subset of Artificial Intelligence, machine learning employs algorithms and statistical models to enable computers to learn and perform specific task. Examples of AI machine learning features can be found in applications like Topaz Labs and On1 Photo Raw.

- **Deep Learning** (AI Generative) – Another subset of Artificial Intelligence, machine learning involves the use of artificial neural networks to model and understand complex patterns and associated relationships. AI-generative technology is component of deep learning platforms. Examples of AI-generative apps include Midjourney, Open AI, Stability AI, Dream Studio, Night Cafe, Photoshop 2024's Generative featured, Adobe's Firefly text-to-image, Luminar AI's generative features.

- **Text-To-Image** – This is a feature of AI-generative applications that and involves algorithmically generating images from a given text prompt. It eliminates the necessity for an original photograph and incorporates elements using a dataset sourced from images scraped from the internet, resulting in a realistic and seamless composition.

- **Image In-Painting** – This feature where AI generates pixels to fill in missing parts or removes and replaces selected element from the original photograph then using replace it with pixel element from the AI's generative dataset.

- **Image Out-Painting** – This AI-generative technique extends the visual contents of an image beyond its original dimensions, offering an expansive view or a broader perspective.

- **AI Rendering** – The utilization of AI-generative algorithms and models to either generate new visual imagery or enhance an existing image.

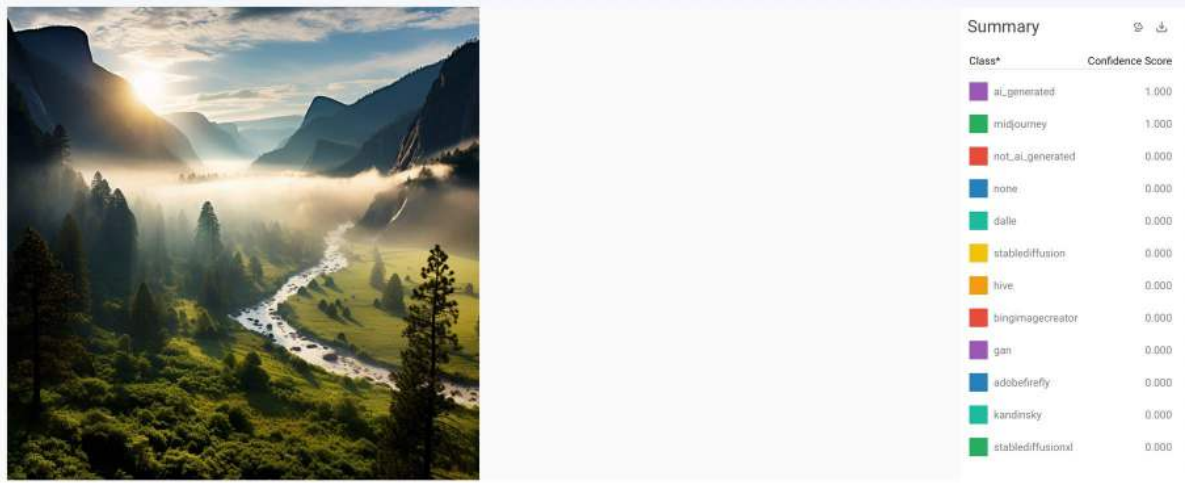
Detecting AI-Generated Text-to-Images

CAPA utilizes a dedicated AI classifier with a 99% realiability rate in detecting AI-generative text-to-image creations. This model is updated regularly and assesses images independently of their metadata.

For all potential winning images, we utilize a dedicated AI classifier model that has undergone rigorous testing by myself, demonstrating a 99% reliability in detecting AI-generative text-to-image creations. This is AI machine learning model was trained on millions of examples, encompassing both AI-generated creations and human-captured images, and undergoes regular updates to ensure optimal performance with the latest generative engines. This AI classifier is not available as a free application and required a paid account.

Important to note, the AI classifier's assessment is independent of the image's metadata, providing a robust a comprehensive analysis. All potential winning images are subjected to this assessment.

Below is an example of the analysis conducted by our AI classifier.



Screen capture of an image that has been evaluated using an AI classifier which had correctly identified the image as being an AI-generated image using Midjourney.

Technology of Photograph Enhanced with Generative Features

As a founding member of the Content Authenticity Initiative (CAI) and its associated standards organization, the Coalition for Content Provenance and Authenticity (C2PA), Adobe is actively collaborating with AI technology firms to establish open standards and enhance transparency regard the origins, facts, and creators of digital content.

On October 10, 2023, Adobe unveiled the official launch of the Firefly (text-to-image) AI generation website and Photoshop 2024 featuring the integration of Generative Fill and

Generative Expand functionalities. Notably, both the Firefly website and Photoshop now incorporate the advanced Firefly algorithm.

Upon activation of the Generative Fill and Generative Expand features in Photoshop 2024, the following outcomes occur:

- Camera detail are stripped from the image metadata.

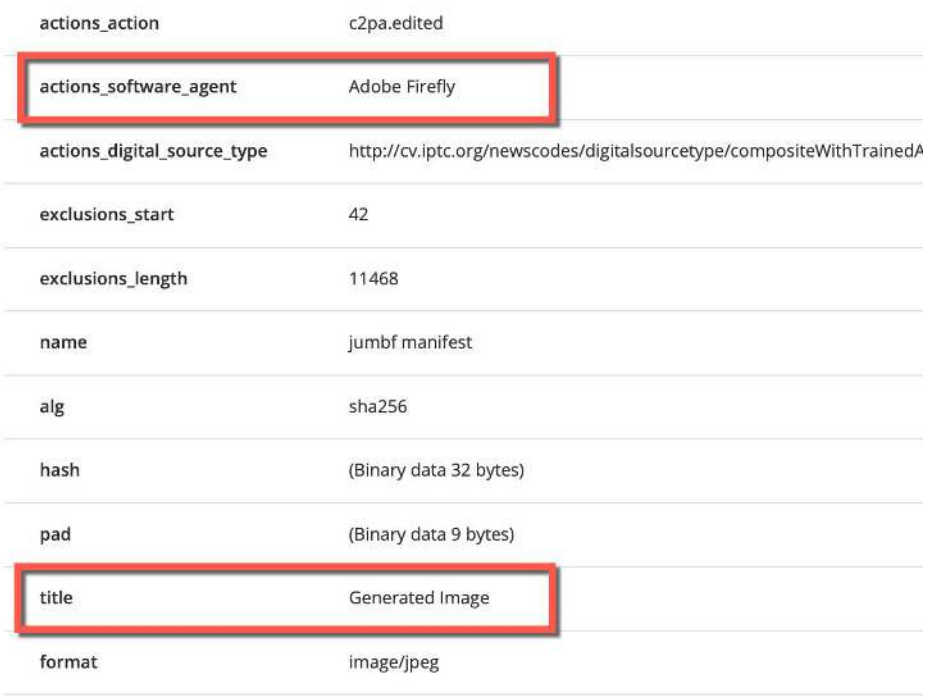
- A new metadata tags are created, featuring freshly created narrative labels as "**Generated Image**" and "**Adobe Firefly**."

SPECIAL NOTE - In the Generative Fill feature, by using either the Lasso Tool or the Elliptical Marquee Tool to select a specific area, the Generative Fill menu will be triggered. Should your objective be to eliminate a designated region in the image using Generative Fill, the Firefly algorithm will promptly mark the image's metadata with tags "**Generated Image**" and "**Adobe Firefly.**"

Example of an element being removed with Adobe 2024 Generative Fill below.

Screen capture example of Photoshop 2024 Generative Fill feature to remove an element from an image.

The following screen capture illustrates an instance of what the Adobe Firefly algorithm adds to the image's metadata when the mentioned element is excluded from the original image using Generative Fill (with or without a prompt being entered). The alternations to the image metadata occurs upon activating both the Generative Fill and Generative Expand features.

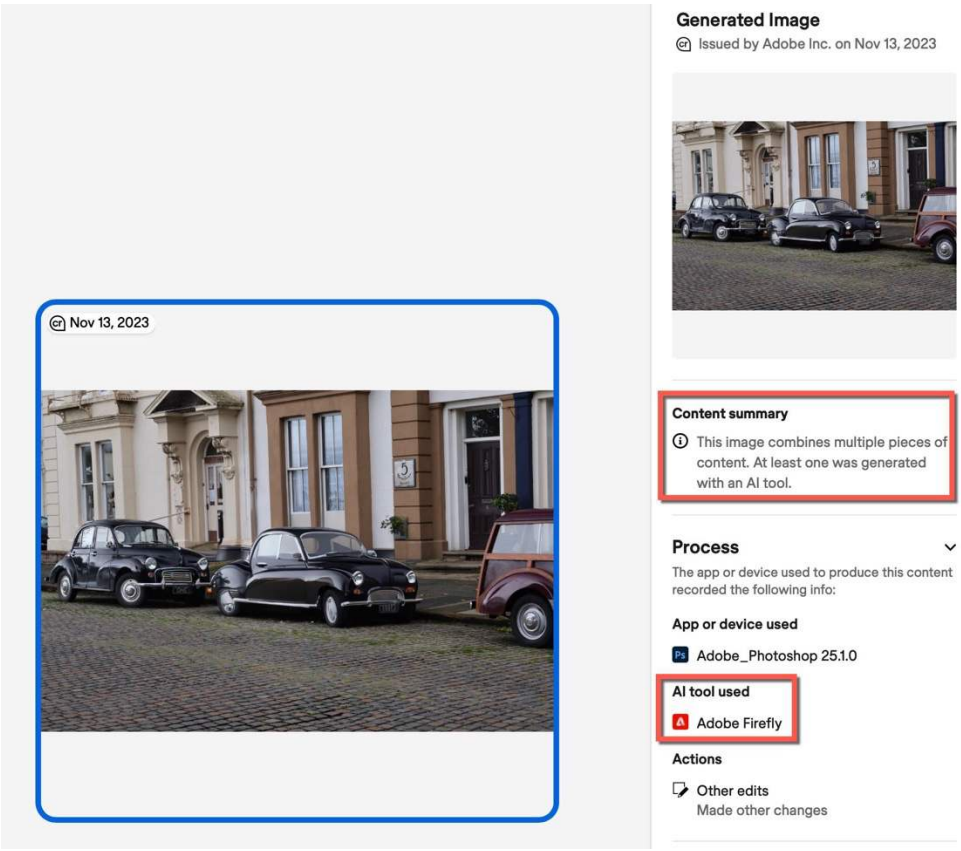


actions_action	c2pa.edited
actions_software_agent	Adobe Firefly
actions_digital_source_type	http://cv.iptc.org/newscodes/digitalsourcetype/compositeWithTrainedA
exclusions_start	42
exclusions_length	11468
name	jumbf manifest
alg	sha256
hash	(Binary data 32 bytes)
pad	(Binary data 9 bytes)
title	Generated Image
format	image/jpeg

Screen capture of metadata2go.com's viewing of the image metadata, containing the Firefly's addition of "Generated Image" designation from activated the Adobe 2024 Generative features.

Not all metadata readers can access the full image metadata. One free metadata which does provide access to the image metadata is https://metadata2go.com. You may wish to become familiar with this website and check your image prior to submitting into one of our CAPA competitions.

Below is an example of an image analyzed by Adobe's Content Credential website (https://contentcredentials.org/verify).



Screen capture from Adobe's Content Credential website, outlining analysis of an image edited in Photoshop 2024 using the Generative Fill feature. As indicated by the highlighted area in red, this image incorporates an element generated with an AI tool.

In our scrutiny of all potential winning images, each will undergo thorough evaluation through various verification and authentication processes. If an image is discovered to be an AI generated or photograph enhanced with AI generative features then the image will be removed from the competition.

Prohibited and Permitted AI Features

When activating a Generative feature within a post-processing application, the entire image is temporarily transferred to the cloud infrastructure of the application provider. While in the application's cloud, the Generative AI algorithm and associated dataset analyze the image.

Based on this analysis, a new vsual element(s) and/or shadow(s) are generated and composited into the original image. These added Generative AI components are deried from a dataset comprising elements obtained

through internet scraping of image elements or the provider's proprietary image resources.

What photo post processing applications contain AI-generative features?

As of May 28, 2024, eight (8) post processing applications incorporate AI-generative technology:

- Canva – contains – Generative Expand, and Generative text-to-image creation.
- Lightroom (includes beta 13.3) – now contains - Generative Remove.
- Luminar Neo – contains – GenErase, GenSwap & GenExpand.
- Photoroom – contains – Generative Expand, Generative Fill, Generative Background and Generative text-to-image creation.
- Photoshop 2024 (includes beta 25.10) – Generative Fill, Generative Expand, Generative background, and Firefly AI Generative text-to-image creation.
- Picsart – contains – Generative Replace and text-to-image creation.
- Pixlr – contains – Generative Fill, Generative Expand, and Generative text-to-image creation.
- Stylar AI – contains – Generative Fill, Generative Expand, and Generative text-to-image creation.

Images enhanced with the noted Generative features are not permitted in our CAPA competitions.

AI features (machine learning AI models) contained in the following photo processing application are permitted in our competitions:

As of May 28, 2024, the following is a list of machine learning AI features which are permitted for use in our photo competitions:

- **Luminar Neo** includes tools like AI Structure, AI Sky Replacement, AI Skin Enhancer, and more that utilize machine learning algorithms to automate and enhance photo editing tasks.

- **ON1 Photo RAW** includes tools like AI Auto Enhance, AI Match Batch Processing, and AI No-Noise AI which aim to streamline photo editing workflows.

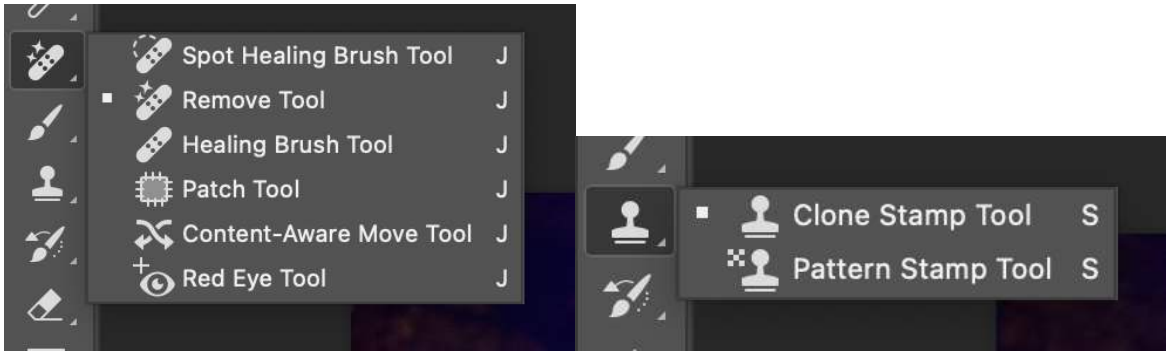
- **DxO PhotoLab** includes DeepPRIME AI technology for tasks like denoising, sharpening, and PRIME deblurring powered by machine learning.

  NOTE - In August 2023 – a DXO representative stated "*I asked for something simpler to fill in missing edges, like Content Aware Fill or something similar. Generative Fill AI, I don't think is likely to come from a company like DXO for variety of reasons*."

- **Topaz Labs AI** includes Gigapixel AI for upscaling images, DeNoise AI, and Sharpen AI leveraging deep learning models.

  NOTE: As of January 16, 2024, Topaz Lab representative stated "*we aren't currently making use of Generative AI as of yet but I can say that this feature is being investigated by our development team for the future version of Gigapixel AI*."

- **Photoshop 2024**, several tools can be employed to eliminate areas of an image without triggering the Firefly algorithm. These tools include:



Screen capture of permitted Photoshop 2024 features for use in our photo competitions. that are permitted in our photo competitions.

Closing Comments

This document emphasizes CAPA's commitment to upholding the integrity of our photographic competitions and preserving the authenticity of this art form. As AI-generative technology advances, CAPA will remain vigilant in addressing emerging challenges and provide time updates to our members and associated camera clubs.

If you have any questions, concerns, or insights to share, please feel free to reach out to me at competitions@capacanada.ca. Your feedback and input are invaluable as we collectively strive to preserve the integrity and spirit of photographic art.

Sheldon Boles – FCAPA
Directeur des concours de la ACAP

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[i] Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, United States Copyright Office, March 16, 2023, https://www.copyright.gov/ai/ai_policy_guidance.pdf