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Inserting multimedia content captured by one device into a document on another device

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<u>ABSTRACT</u>

Many applications include capabilities that allow users to capture and insert multimedia content into a document by capturing it with the device camera. However, document creation and editing tasks are often performed on traditional desktop or laptop computers on which the camera is typically positioned in a fixed location above the screen. Capturing multimedia content that includes matter other than that located directly in front of the computer screen is awkward and often infeasible. On the other hand, integrating multimedia content captured by another device into a document being edited on the separate device requires a cumbersome and inefficient multi-step process.

This disclosure describes techniques that enable a user to insert into a document multimedia content, such as photos, videos, etc., captured using a camera of any device, including a device other than the one on which the content is being inserted. The techniques provide a simple process to insert multimedia content captured by other devices.

<u>KEYWORDS</u>

- Document editor
- Word processor
- Collaborative authoring
- Multimedia content
- Cloud-based synchronization
- Peer-to-peer file transfer
- Content insertion

BACKGROUND

Users often insert multimedia content, such as photos, videos, etc. into documents that they create using various applications such as word processors, presentation software, etc. on their laptop or desktop computers. Many applications include capabilities that enable users to capture and insert multimedia content into a document using the device camera. Document creation and editing tasks are often performed on traditional desktop or laptop computers on which the camera is typically located in a fixed location above the screen. Capturing multimedia content that includes matter other than that located directly in front of the computer screen is awkward and often infeasible.

One approach to overcome the limitations of the desktop or laptop camera is to capture the required multimedia content using the camera of a separate device, such as a smartphone, tablet, etc. Such an approach requires capturing the multimedia content using the mobile device and uploading or emailing the content to an online repository that can be accessed from the desktop or laptop computer on which the document is being edited. After the upload is completed, the user can insert the multimedia content into the document either through an interface that integrates with the repository or by downloading the content locally and inserting it into the document.

Similar approaches are employed in situations in which multiple users work collaboratively to create a document, with one user editing the document on one device and another capturing multimedia content with another device. Currently, such situations require the user who captures multimedia content to send it via a separate channel, such as email or online repositories, so that the editing user can download and insert it in the document. Such a multi-

step process makes it cumbersome and inefficient to integrate multimedia content captured by another device into a document being edited on a separate device.

DESCRIPTION

This disclosure describes techniques that enable a user to insert into a document multimedia content, such as photos, videos, etc., captured by the camera of any device, including a device other than the one on which the content is being inserted.

The techniques can make the process of inserting multimedia content captured by other devices as fluent as inserting content from the camera of the device on which the content is being inserted. To that end, when a user initiates insertion of multimedia content into a document being edited on a given device, the user is asked to select the camera to be used to capture the content. With user permission, a list of cameras presented to the user includes the camera attached to the device on which the document is being edited as well as the cameras of other devices that the user owns. Once the user chooses a device, an application to capture content is brought up automatically on the device and the user is shown a notification to accept the request to capture content via the device. The user then captures the desired content using the camera of the specified device, and the content is automatically uploaded and inserted at the appropriate location in the document being edited, which may be on a device other than that capturing the multimedia content.

If the size of captured multimedia content is large, transferring the content between devices can be slow, especially on low-bandwidth Internet connections. In such cases, a placeholder is displayed within the document until the multimedia content has transferred fully and is available for viewing on the target device. The user can thus continue to work on the

document and position and/or scale the multimedia content without having to wait for the transfer to complete.
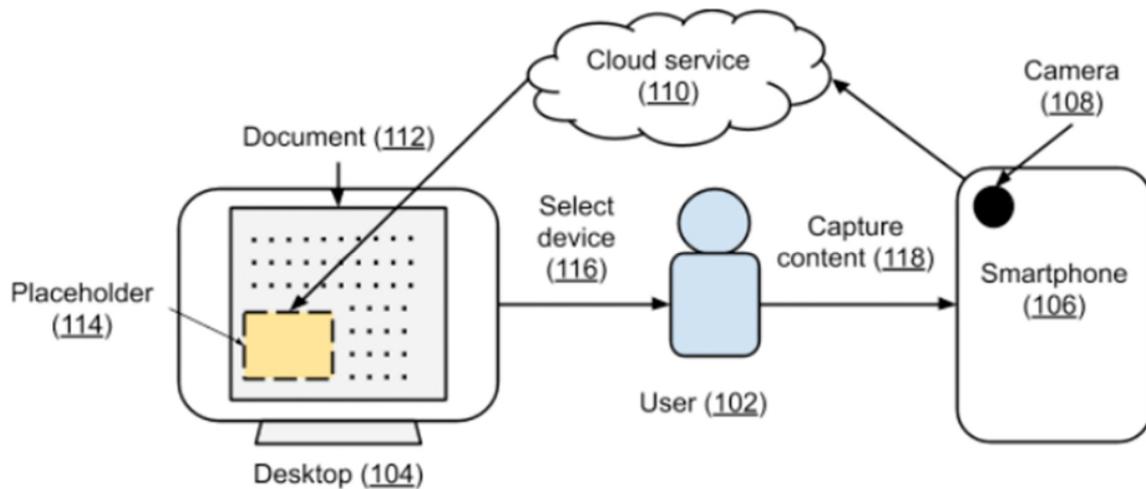
Fig. 1: Inserting content from the camera of one device into a document on another device

Fig. 1 shows an example of inserting content into a document, per techniques described herein. A user (102) is editing a document (112) on a desktop computer (104). Upon the user initiation the insertion of a photo into the document, the user is prompted to select (116) a device to be used for capturing the photo. When the user chooses to capture the photo with a camera (108) of the user's smartphone (106), a capture content request (118) is relayed to the smartphone.

The user can activate the smartphone to capture the photo by accepting the request on the smartphone. Upon such activation, a photo is captured and relayed to the desktop via a cloud service (110) or other mechanisms (e.g., direct transfer). A placeholder (114) for the photo is provided in the document until the photo finishes transferring to the desktop and is inserted into the document. During the transfer, the user can use the placeholder to move or resize the photo within the document and can continue to edit the document.

With appropriate user permissions, the same approach can also support collaboration between users. For example, consider a scenario in which a user Alice is editing a document while another user Bob is walking around and capturing photos or other content that is to be inserted in the document. If Bob permits, Alice can be shown Bob's devices as one of the choices available for capturing content when she indicates the desire to insert multimedia content in the document.

If Alice selects Bob's device, Bob is shown a notification asking whether he permits the use of the camera of his device to capture multimedia content for insertion in the document that Alice is editing. If Bob accepts, he can then use the camera on his device to capture the content desired by Alice. Alice can indicate the desired content by in-person communication if Alice and Bob are co-located or by appropriate mechanisms, such as text messages, phone calls, etc. The content captured by Bob's device is transferred to Alice's device and inserted at the appropriate place within the document.

With user permission, the transfer of multimedia content from the capturing device to the target device can occur via any suitable mechanisms including peer-to-peer communication, commonly accessible cloud repositories, etc. If the user permits, the devices available to a user for capturing multimedia content can be determined based on the devices associated with the user's account with an online service or via any other suitable mechanism. Similarly, if the relevant parties permit, the capability to request multimedia capture via the camera of another user's device can be integrated with the contact list functionality. For instance, a user may select someone from the contact list when asked to choose a device for capturing the multimedia content to be inserted.

Implementation of the described techniques can enrich and improve the user experience of inserting external content into documents by making it fluent and efficient to employ other devices to capture and integrate multimedia content of interest. Further, the techniques can facilitate seamless division of tasks in collaborative authoring such that one user can be in charge of editing while others can focus on capturing desired external multimedia content.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user's social network, social actions or activities, profession, a user's preferences, or a user's current location), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user, or a user's geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level), so that a particular location of a user cannot be determined. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes techniques that enable a user to insert into a document multimedia content, such as photos, videos, etc., captured using a camera of any device, including a device other than the one on which the content is being inserted. When a user initiates insertion of multimedia content into a document being edited on a given device, the user is requested to select the camera to be used to capture the content. The user then captures the content using the camera of the specified device, and the content is automatically uploaded to the

editing device, directly or via a cloud intermediary, and inserted at the right location into the document. Implementation of the techniques can enrich and improve the user experience of inserting external content into documents. Further, the techniques can facilitate seamless division of tasks in collaborative document authoring.

REFERENCES

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