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Defensive Publications Series

August 2020

FIND MY ARCHIVED JOB

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Recommended Citation

INC, HP, "FIND MY ARCHIVED JOB", Technical Disclosure Commons, (August 06, 2020)
https://www.tdcommons.org/dpubs_series/3503



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Find My Archived Job

Terminology

- Hash – In this article the meaning is hash (64 bits) from an image. There are many techniques to do it. In this case we can refer for example to exit ones like [pHash](#), [Blockhash](#) or any other hash algorithm
- DFE – Digital Front End
- Archive Job – zip file that name as J (Job) file type. The files contain information like job settings, PDF and thumbnail that can be use later to re-load the job to the DFE.
- Repository – Storage of the archived jobs. Can be cloud, SAN disk, or any other storage. There can be hundreds of thousands of archived jobs in this repository

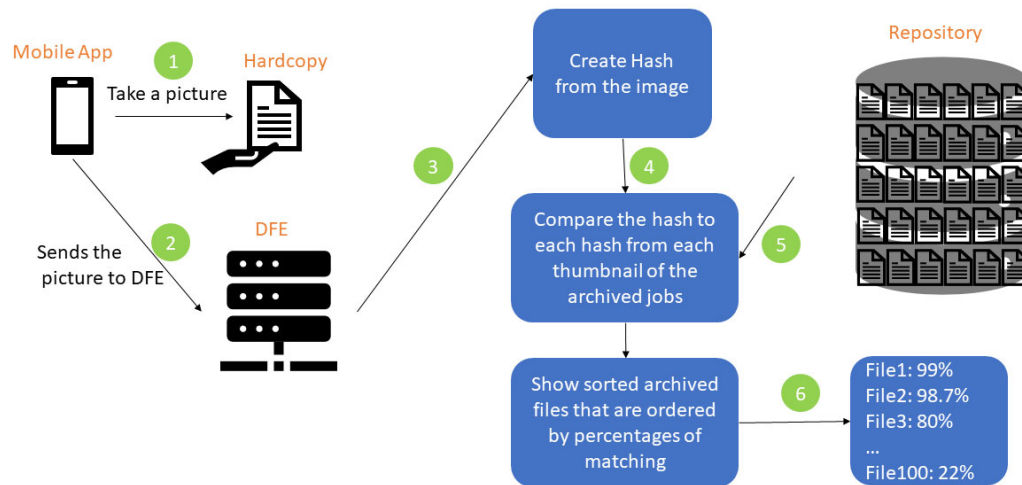
Abstract

In Label & Packing industry ~80% of the jobs are repeated jobs. In commercial industry there are also repeated jobs but with lower percentage. The customer prints the job. Archived it (digital) and after a while (few days/weeks/months) he is loading the job again to the DFE and prints more copies of it. During the time the amount of archived jobs increases. Customers have tens thousands or even hundreds of thousands of archived jobs. They usually also keep at least one good hardcopy of the printed sheet of the job in order to be able to match the job's color, imposition and other settings later when they need to re-print it. Customers need a simple way to find their archived digital job.

Today in order to find the archived job the customer needs to find a way to match the name or attribute (tag) that he used when he saved the archived job in order to be able to track it and re-load it into the system. It takes time. For some cases it's too hard to find it and he is going back to find the original PDF upstream in other places in the workflow like MIS tools or on the designer disks. After that he needs to define the job settings from scratch to match to the finishing device and to the hardcopy (like imposition, marks, etc...).

This novel process will save to customer lot of time and reduce the mistakes. It will automate the process of finding the archived job in few seconds. The amount of archived jobs won't be a real factor. It will give the user the best match to what he is looking for and if there are few matches it will give the user all of them. The user won't need to think how to archive the job today (which tags to use) in order to find it later in the future. The system will find for the user his archived job by only taking a snapshot from the hardcopy printed sheet

Workflow Diagram



Solution

Step 1

- PrintOS mobile App will have an option: “Find my archived job”
- User will click on it
- User will need to select the DFE from the DFE lists in the App. User will see only his DFEs
- User will take a photo of the printed hardcopy using the App
- App will send the image to the DFE

Step 2

- DFE will get the image from mobile App via encrypted protocol between the mobile App to the DFE
- DFE will create hash 64 bits using one of the existing algorithms like **pHash**, **Blockhash** or any other hash algorithm. These algorithms are able to find a match even if the images from the hardcopy and the digital have different: brightness, contrast, scaled, orientation and cropped borders which can happen by the way the photo was taken from the mobile
- DFE already has DB with all the J files that are in the repository and their 64-bit hash in the DFE DB.
- DFE will compare the hash from the hardcopy image with each archived job’s hash

Step 3

- DFE will show to the user all the files that are in the repository, sorted by the best match
- User will click on the job and will be able to see its digital thumbnail

- User will confirm to re-load the job to the system via the DFE UI

Proof of Concept

- I took one job: Flower
- From this job I took:
 - Digital image (that will be in the repository of the DFE)
 - Snapshot from the hardcopy printed sheets. Taken by iPhone 6 camera with no special App
- The snapshots were taken with different orientation than the digital image in order to prove that it can be found with different orientation
- The sizes of the digital images and the snapshots were different. Even the file sizes are very different
- The snapshots were taken with no special light or any special care
- I run pHash demo tool to find matches between the digital image and the hardcopies
- The tool found the expected matches and marks the unmatched ones as expected

Flower

Snapshot from Hardcopy



Was taken with iPhone 6 camera

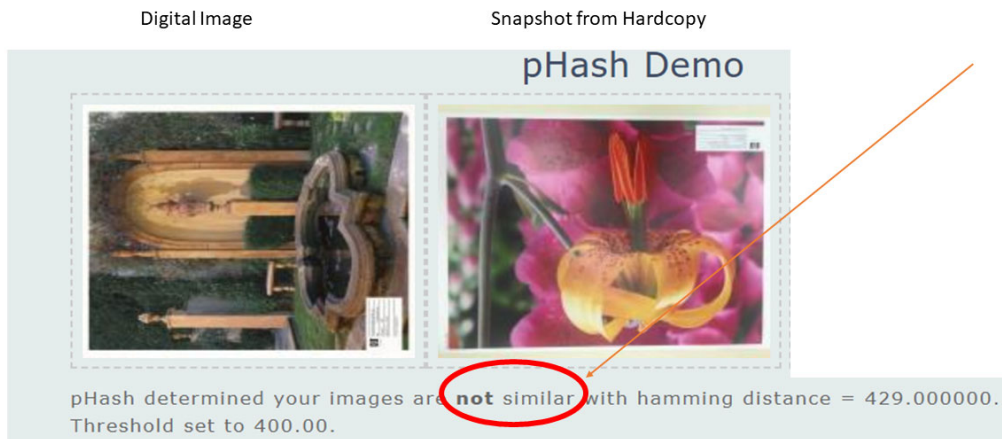
Digital Image



Match



Doesn't Match



Disclosed by Raz Zamir, HP Inc.