Wilcom Web API Support Information

Protecting your Website from Image-uploads unsuitable for embroidery

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INTRODUCTION

Autodigitizing is a frequently sought function in the Wilcom EWA service. Autodigitizing means to convert an Artwork to an embroidery file, i.e. "Automatic Digitizing", instead of digitizing by a person. Autodigitzing is a complex and difficult process where an AI (Artificial Intelligence) module processes the image and converts it into an artwork that is suitable for embroidery, reduces colors, generates objects, chooses stitch types, stitch directions and other parameters similar to what a human being would do in the digitizing process.

Not every image is suitable for embroidery. Images can be too large, can contain unrecognisable shapes/objects, boundaries cannot be established, or objects have color grading that cannot be done in embroidery, etc. Yet, when such image is uploaded to the API server, the embroidery engine tries to process it. Such process may take a long time before it fails. It wastes resources, takes valuable time away from other API calls, and costs money to the API customer without any return. Further, it may frustrate the website visitor, the potential customer, who does not understand what the limitations are and goes away instead of placing an order.

It is important to prevent website visitors to upload such images. Below are some ideas about protecting your website from such problems.

WHAT TYPES OF IMAGES ARE SUITABLE FOR EMBROIDERY?

First, we need to ask: what types of embroidery are popular in an online decoration environment?

The simple answer is: logo/emblem style. These are simple, "cartoon-like" shapes with lettering under or around. Over 90% of commercial embroidery orders are in this category.

Images created in graphics software with **well-defined outlines** and **flat colors (without gradient)** therefore are the best for embroidery. Efficient embroidery designs (company logos) typically have no more than 5-6 colors otherwise they become too complex and the brand image/message gets lost. Also, too many colors and color-changes in the embroidery production makes the design very costly to produce. Color-reduction is a main function in making the image suitable for embroidery.

Limitations of size/width of embroidery objects – especially very small objects. Unlike in printing, embroidery objects are made of stitches and therefore their limitations are mainly come from the

limitations of the stitches. Very small objects will not show well and will not stitch well. The Autodigitizing process will remove very small objects as "noise".

Image resolution. Many times, uploaded images simply do not have enough details. This can happen when customers upload screen resolution images (72/96 DPI). With such images the object boundaries cannot be recognised (for example the AI needs at least 3 pixel-width for recognising a line). We recommend that images have about 300DPI resolution.

Photographs can be embroidered too. But this requires a special, non-traditional interpretation of the image. Wilcom EWA does not use these techniques therefore photographs should not be uploaded.

HOW TO FILTER OUT UNSUITABLE IMAGES ON YOUR WEBSITE?

Instructions to your website visitor - At first level, we suggest that you can provide INSTRUCTIONS on your website about what types of images are preferred and what types of images will be rejected. This way you can manage the user behaviour pro-actively.

**Filtering – You can use your own filtering or use third party tools**

In order to protect your website from unsuitable images you can consider to filtering what the website visitor uploads and reject such image with proper "error" message to inform the user that such image is not suitable for embroidery.

Your own filtering. You can setup size and pixel limitation. Optionally, you can also limit the number of colors. Example for limitations:

- Maximum File size: 2MB
- Maximum pixel count: 5,000,000 pixels. The 300DPI preview image is checked for vector file.
- Maximum area size: 22,500 square millimetres.
- Minimum area size: 100 square millimetres.

Using third party tools and services

AZURE – an AI service that analyses content in images

https://azure.microsoft.com/en-us/services/cognitive-services/computer-vision/#overview
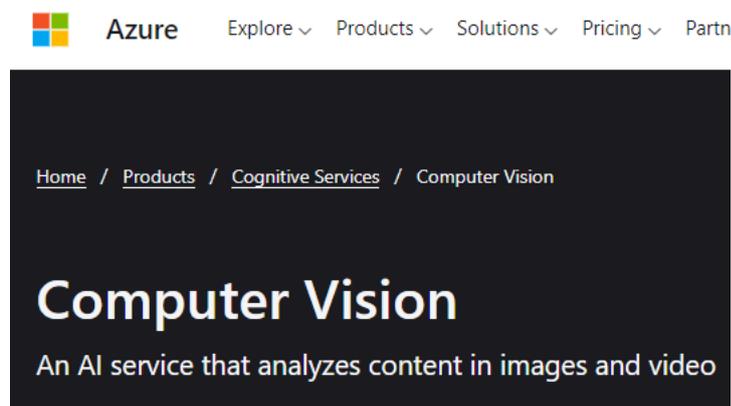
With this service you can teach your Azure AI what is an "acceptable" and "unacceptable" image by feeding it with images in both categories. After a number of examples the AI will be able to filter the uploaded images and will reject the unsuitable

images with over 90% accuracy. Even though this is a paying service, the cost per image is very small compared to the cost of lost service when processing unsuitable images that ultimately fail to get Autodigitized.

In order to decide what image is suitable and what is not, the best method is to use Wilcom's EmbroideryStudio e4.5 software with the Instant Smart Design process. This will give you the same result as the V4.5 API Server would. This way you can build your image library of good and bad designs and then you can feed these to the Azure AI.

COLOR REDUCTION – process images to reduce colors to a number acceptable for your embroidery production unit. Again, color reduction has many purposes, the most important being is to minimise the cost of the embroidery production. The more this can be automated the less editing is necessary later.

Third Party Color reduction software also can be built-into your website.

PROPER INFORMATION MESSAGING TO YOUR CUSTOMERS – WEBSITE VISITORS

Again, it is important that you manage your customers' expectations who do not understand that not every image is suitable for embroidery. A good up-front explanation reduces frustration and disappointment, so customers do not try to keep uploading the same unsuitable image, not understanding why it is not processes.

Self-explanatory error messaging is also important, so if something cannot be done your website will display a meaningful message to your customer, so they understand the limitation.

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For further information contact support@wilcom.com