

2D ONLINE LEGOIZER

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Play Description:

The 2D LEGOiser allows the user to view pictures from file, web gallery, or USB camera and convert these to a 44x44 LEGO image with a 2 stud wide frame. This conveniently fits the 48x48 baseboard which if moulded in transparent plastic may be placed over a scale printout or 'building instruction'. Each picture, comprising the 4 monochrome LEGO shades will be unique, which offers an excellent example of how customised LEGO sets might be ordered via e-commerce. The sole use of 1x1 plates in only four colours has been identified as a great advantage in trying to automate a process wherein any great number of types or hues would add exponential complexity to the manufacture / packaging logistics.

Additional value is gained in the ability to place ones pictures in a moderated gallery on the LEGO website, print the picture on 'Iron on' media for T shirts and send e-postcards with greetings. The latter may again require moderation, but could be deleted if required or might only be possible by selection from the previously moderated gallery.

The frailty in a wall of 1x1 plates has been previously identified and thus the building plate solution is preferred. Since this does not offer the resolution of the wall solution (which benefited from the slimness of the bricks in the vertical plane), the maximum standard building plate of 48x48 is used and the picture is best cropped as close to the face as possible.

Initial editing functionality is seen as a manual tuning of brightness and contrast, and the ability to recolor bricks to remove any unwanted backgrounds or generally improve the picture. The brightness controls are shown in the example below, as being on the image page, but by referencing the source picture the functions could be available directly on the LEGOized display.

Technical Description:

LEGOiser shall be created in Java, and may be built in two forms.

- ◆ A web based applet.
- ◆ A free-standing application on the users PC

The Application may be delivered in numerous forms:

- ◆ A Web based application with download links for any missing components
- ◆ Bundling with a Logitech or LEGO Camera
- ◆ A boxed product with frame, board and a predefined quantity of plates/tiles.
- ◆ A free downloadable application with revenue made from sales of Play Materials.
- ◆ Magazine Cover disk

In CD form it is possible that the install would simply ensure all necessary system components were installed, while the application would remain on the LEGOiser website.

In each instance the application may use a LEGO supplied gallery of images but will be much more impressive if the child can use his or her own images. This requires that the application include file management to both load and save images to and from the user's hard disk.

Signed Content

The nature of browsers is that nothing can be legitimately written to, or read from the user's hard disk beyond the simple 'cookie' in a specific 'cookie' directory reserved for that use. This confined browser environment is thus 'safe' and browsing websites should not have 'an effect' upon ones computer. The industry describes this as a 'sandbox' i.e. does what it wish within, but cannot mess up everything outside!

To access files (as we shall need to do) requires that we step outside of the sandbox. This may now be done using 'signed content' wherein the applet requests the user allow it these extra privileges and advises that third parties, such as Verisign, confirm it to be authentic LEGO software. The message also includes a tick box to say 'Always trust LEGO software...' which once ticked suppresses this warning message.

LEGO Camera Access

Whilst Java is ever increasing in its flexibility, it does not currently possess direct tools to access a camera. Although API calls might be made to the Windows twain drivers for ease and speed of implementation, Randall Fink Iseksen has advised it would be advantageous for the application to use a dynamically linked library [DLL] on the user's machine. This may easily be placed there when installing the drivers accompanying the LEGO Camera, or downloaded as a driver update if early cameras do not ship with this DLL.

3rd Party Camera Access

Whilst offering the LEGO Camera a USP, The LEGO Camera is a Logitech OEM, which means the LEGO Camera DLL could work with all Logitech camera's, and these presently dominate the market. This would in turn give greater sale of bricks, but reduce the LEGO Cameras USP. Other cameras represent a problem in that the DLL is written for the Logitech devices. If absence of support for a particular camera became a problem an updated DLL offering increased camera support could be created later.

As a complete alternative solution the DLL could be dropped in favour of calls to the Windows MCI (Multimedia Control Interface) which removes the bespoke nature of the DLL. However the DLL has advantages in that it allows various optimisations to be made to the image prior to it reaching the Java Applet.

My preferred solution would be to offer LEGO Cam / Logitech support initially and thereafter determine if there is sufficient demand to justify the support of other cameras.

Development Breakdown: (Online solution):

Product Clarification (Hans Berghaldt / LMI)

- ◆ Presentation of Potential Functionality
 - Agreement with marketing on target cameras
 - Agreement with Marketing on Functionality

LEGOizer production (Randahl Fink Isaksen)

- ◆ LEGOizer DLL transition from development prototype to production variant
- ◆ Development of Java development, from prototype to production variant
- ◆ Import GIF, JPG
- ◆ Marquee control for Image cropping
- ◆ Dynamic Brightness/Contrast control
- ◆ Ability to edit brick colours in the LEGOised image
- ◆ Dynamic calculation and display of Brick quantities
- ◆ Save GIF, BMP (44 x44 greyscale or 4 bit image)

Web-page /Interface (Lego.com / LMI)

Flow design

Graphic design

- ◆ LEGO.com Sandbox provision
- ◆ Introductory page
- ◆ Requirements Confirmation Java runtime version
Camera DLL
- ◆ Requirement Downloads As above
- ◆ Gallery Display of uploaded images
Upload facility
Send e-Postcard of gallery image
- ◆ E-commerce Submit payment / delivery details
Send brick quantities

- ◆ Help [either]
 - Send LEGOizer bitmap
 - Dumb How-to help page
 - LEGOizer Wizard
- ◆ Moving to On-line status

QA (LMI QA)

- ◆ Testing

Implementation of e-commerce and production logistics lie outside of this report

