Customizable Triple Letter Blocks Ambigram

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VIEW IN BROWSER

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Summary

Customizer for creating 3D ambigrams of letter blocks that can be 3 different letters depending on the viewing angle.

Art & Design > 2D Plates & Logos

Tags: customizable customizer monogram thingiverse mothersday fathersday illusion 3dlettering ambigram

Customizable Triple Letter Blocks Ambigram

This is a 3D ambigram made of letter blocks that are each shaped like three different letters when viewed from three orthogonal viewpoints. You can create your own with the customizer using UPPERCASE letters, numbers, a space character, or any of the special characters: $&<>+@/\♥♠♦♣♪♫♀♂←→π. Almost all letter combinations make viable blocks. **Note: you cannot use the ❤ glyph**; it is not available in the font used. **You must use the ♥ glyph if you want a heart**. You can copy it from here and paste it into the customizer field.

Dual Letter Mode

Although you can leave the third string blank to create dual letter blocks, unless you're using soluble supports you might want to instead use

the customizer in my **Customizable Dual Letter Blocks Illusion** because the letters there don't have as severe overhangs and the J and M don't require supports like they do with the font used in this thing.

Running the Customizer

This download includes a .SCAD file to create customized 3D printable models. By setting some simple parameters from drop-down boxes and sliders you can easily create your own customized model.

You will have to first install OpenSCAD (free software) on your own computer to process the .SCAD file and present the customizer parameters. Download OpenSCAD and get started. For further details on running the customizer see DrLex's instructions on How to Run Customizer on Your Own Computer.

Setting Fonts in the Customizer

The font used is the Rubik Mono One font from the Google Fonts repository. It is available at: https://fonts.google.com/specimen/Rubik+Mono+One

And if you want to use any of the special characters, you will also need the Overpass Mono Bold font. It is available at: https://fonts.google.com/specimen/Overpass+Mono

To make a font available to OpenSCAD you have three options:

- Install the font to the system. The procedure for installing system fonts is dependent on what operating system and what version you are using (Ubuntu Linux 16.01, Ubuntu Linux 20.04, Windows 7, Windows 10, Mac OS 9, Mac OS X, etc.). If you don't know how to install a font on your system then search the web for instructions.
- Add the font file to your fonts folder, creating the folder if it doesn't already exist. On Linux this would be something like "/home/YOURUSERNAME/.fonts" and on Windows 10 it would be something like "C:/Users/YOURUSERNAME/.fonts".
- Add the font to the folder that contains the OpenSCAD file that you want to use the fonts. You will also have to add to the OpenSCAD file the 'use <fontname.ttf>' command substituting the filename of the font for "fontname.ttf".

Close OpenSCAD if it was open while you were making the font available and then relaunch it after you have installed/added the font.

For additional details, see the Using Fonts and Styles section on the following page:
https://en.m.wikibooks.org/wiki/OpenSCAD_User_Manual/Text

Alternative to Installing OpenSCAD on Your Computer

This model is also published on the Thingiverse web site and the Thingiverse online customizer may be used to create your personalized models.
Beware that the Thingiverse web site has been an unstable disaster since March 2020 and they weren't even processing their customizer jobs for over 2 years (July 10, 2020 to August 4, 2022). If you try to use it and your job is still sitting in the queue after several minutes, that probably means they stopped creating the customizer models again and your job is never going to be processed. It might be only a temporary stoppage so you could hope for the best and try again later.

Creating Your Customized Model

If the order of the words in your model matter, the words flow more naturally if the model needs to be rotated along only a single axis to get to the next word. So a good rule to follow is if the top letters are aligned to the left face, you should put the first word on the top so that you read from the top, then down, then right. And if the letters are aligned to the right face then you should put the last word on the top so that you read from the left, then right, then up. See the picture of the FEED YOUR MIND models for an illustration of this principle. There's also an STL included with two left-aligned models - one that follows the rule with the first word on the top and the other that doesn't follow the rule with the last word on the top. You can spin it around in Thingiview to see the difference it makes.

The orientation of the letters in relation to each other is important and most letter triplets have a best orientation. There are six permutations for placing the letters on the block faces and since the top letter can be aligned with either the left facing letter or the right facing letter, that doubles the number of ways that a block can be made with the 3 letters. These can be represented as:

LRTL, LTLR, RLTL, RTLL, TLLR, TLRL,

LRTR, LTRR, RLTR, RTRL, TRLR, TRRL

where L is the left face, R is the right face, TL is the top face aligned with the left, and TR is the top face aligned with the right. See the GEB 12 model for an example showing all 12 permutations.

Most letter triplets are compatible, but some letter combinations might not make a viable block. An "L" and a "T" are probably the least compatible letter pair because an "L" has material only on the left and bottom and a "T" has material only on the center and top. Even so, they still can make viable blocks with every letter for the third letter depending on how they're oriented. If the "L" is the left letter and the "T" is the top letter and is aligned to the right letter every letter chosen as the right letter makes a viable block. The L/T letters make viable blocks with some of the letters in other orientations as well.

The customizer app has an option to generate six permutations at once so that you can more easily find the best orientation. Try it first with your preferred orientation without generating the six permutations and if you don't like the results run it again and generate the six permutations. If you're still not satisfied with any of the models then generate the six permutations with the top letter aligned to the other face. If your words (or names) are several letters long the customizer may take 10 or 15 minutes to run when it's generating all six permutations.

You can't tell from the preview which blocks are viable because even viable blocks look messed up in the preview, so you'll have to create your thing to examine the blocks, or render it if you're running it locally with OpenSCAD. Note that although there may be bits floating in the air which will make it look like a block isn't viable, sometimes those bits aren't necessary and could be removed. Slic3r has a "split" feature which can be used to remove those bits.

Printing with supports

Not all letters require support, so you might be able to get away without supports if you don't use any of the letters C,G,M or S. Those letters absolutely require support. The letters E,F,I,J,P,T, and Z should also have supports, but they can be printed without if you don't mind clipping and sanding the messy first several layers of the unsupported areas where supports should be used. Of course, the letters on the other faces will affect the practicability of printing without supports so if those letters are paired up with another letter that should have supports then it's probably not going to turn out well without supports.

If your model does need supports, you'll probably want to use soluble supports if that's an option available to you. If your model has a non-zero base, it will require support structures on the model itself and not just on the build plate only. If soluble supports isn't an option, you might want to print the letters separate from the base and use Cura's tree support structure. It's still experimental and is glitchy, but I have had good success with it: whenever it generates messed up structures I just move the model

and then moved it back and get it to regenerate. Alternatively, you could use regular linear supports but rotate the letter block up to 45°.

If you're not using soluble supports, before you try to print the entire model you may want examine the model to find the letter block with the most difficult supports and then print a test of that letter block to help tune your support settings.

If you're not going to paint it, printing with white filament would be a good idea since all scars from the support structure will be white no matter what color filament you use, but the scars won't be visible with white filament. Lighter colors leave less visible scars than darker colors.

If you're using soluble supports, you might want to use black filament or another dark color to reduce the visibility of shadows.

Included Models

I recreated and included the few rare models which I had found were viable in the previous version: "I♥U MOM", "I♥U MUM", "GOOD LUCK GRAD", "GOOD LUCK BABE" and "GOOD LUCK DUDE". If you want one of these, you might want to print the model from that version (Customizable Triple Letter Blocks Illusion) instead of the one here.

I've also included a several additional ready-to-print models to show what the customizer is capable of creating. The "BEST EVER DAD♥" and "I♥U DAD" models might make good gifts for Father's Day and the "BEST EVER MOM♥" model might make a good gift for Mother's Day.

The "GEB" model is inspired by the cover art for the book "Gödel, Escher, Bach: an Eternal Golden Braid" by Douglas Hofstadter, which is where I first saw a triple letter block 40 years ago and which is the inspiration for this creation. Besides the two large blocks oriented as in the book cover, it also shows all 12 permutations for the letter block.

The "TRIPLE" model is just a representative model where all three words are the same. All letters and other characters except for /,,♀, or ♂ can be used to create a model like this with all three faces having the same characters.

Technical Info

The font used is Rubik Mono One from the Google Fonts repository. The choice was very limited as it had to be available to the customizer, it had to be monospaced, and the Q had to be distinguishable from an O with the descender portion cut off. The previous version used Overpass Mono Bold but it was ill-suited for the task due to the skinny letters which made it almost impossible to find models with all viable blocks. The chunky Rubik

Mono One font is almost perfect for the task and the fact that it has rounded corners makes it even better. However, it doesn't have glyphs for any of the special characters, so the code falls back to using the Overpass Mono Bold for those characters.

If you are running the code on your own machine using OpenSCAD, you will need to install the Rubik Mono One font on your system. It is available at: https://fonts.google.com/specimen/Rubik+Mono+One

And if you want to use any of the special characters you will also need to install the Overpass Mono Bold. It is available at: https://fonts.google.com/specimen/Overpass+Mono

This remix is based on

Customizable Triple Letter Blocks Ambigram

by Lyl3

Model files

triplemultiletterblocksv302.scad

triplemultiletterblocksv302-triple-letter-blocks.stl

triplemultiletterblocksv302-ilu-mom-dad.stl

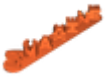
tripleletterblocksv30-best-ever-dad.stl

tripleletterblocksv30-best-ever-mom.stl

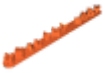
tripleletterblocksv301-feed-your-mindx2.stl

tripleletterblocksv301-feed-your-mind-goodflow-po.stl

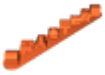
tripleletterblocksv30-iheartu-dad.stl



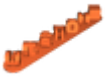
tripleletterblocksv301-imagine-believe-achieve.stl



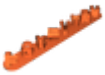
tripleletterblocksv301-healthybody-healthymind-he.stl



tripleletterblocksv301-faster-higher-stronger.stl

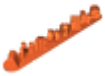


tripleletterblocksv30-power-wisdom-courage.stl



tripleletterblocksv301-loveyou-forever-andever.stl

tripleletterblocksv30-good-luck-grad.stl



tripleletterblocksv30-marvel-avengers-endgame.stl

tripleletterblocksv30-iheartu-mom-iheartu.stl

triplemultiletterblocksv30.scad

tripleletterblocksv30-good-luck-dude.stl

tripleletterblocksv30-iheartu-mum-iheartu.stl

tripleletterblocksv30-good-luck-babe.stl

tripleletterblocksv30-triple-triple-triple.stl

tripleletterblocksv30-geb12.stl

Find source .stl files on Thingiverse.com

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