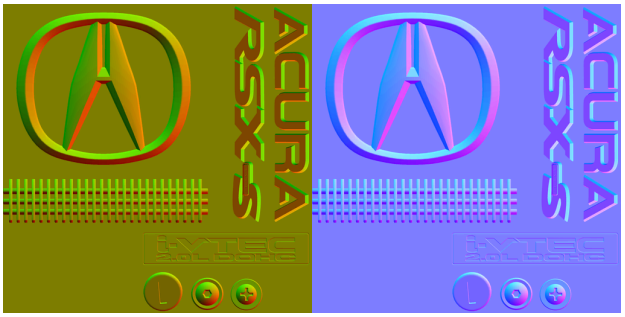
How to convert “yellow” to “purple” normal map

By PolySoupList

Source: This is normal 1: what normal maps are and how they work, This is normal 3: Types of normal maps

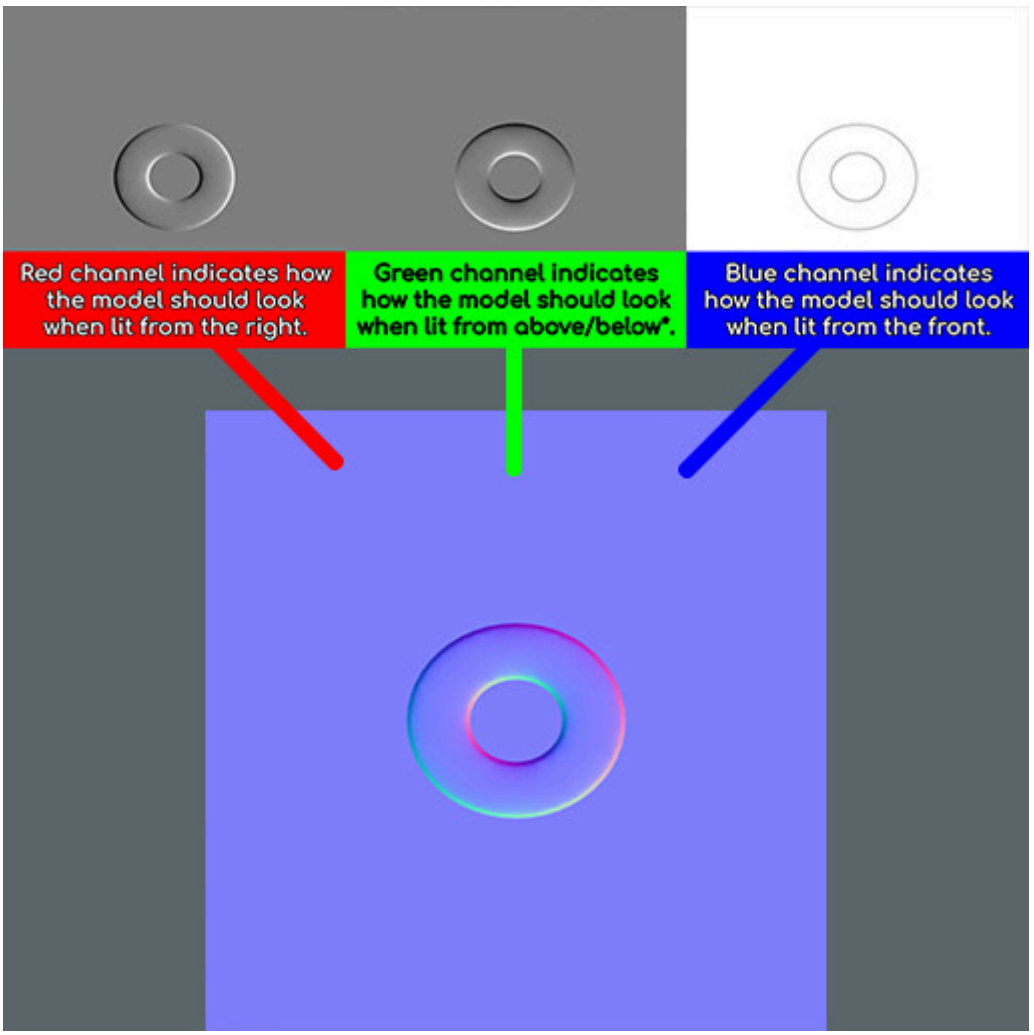
This tutorial explains how to convert a `2-channel tangent space normal map` aka `yellow normal map` into a `tangent space normal map` aka `purple normal map`.



Tools required

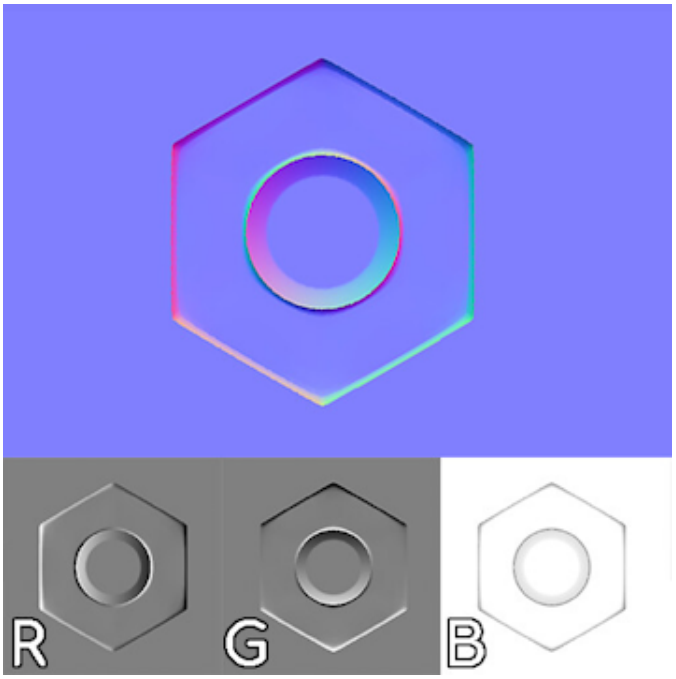
- GIMP or any other image editing software able to decompose images into channel layers.

To understand the conversion process it is crucial to familiarize yourself that normal maps make up a set of 3 greyscale textures, stored on a single image (some may have an alpha channel but I will cover that in a separate tutorial):



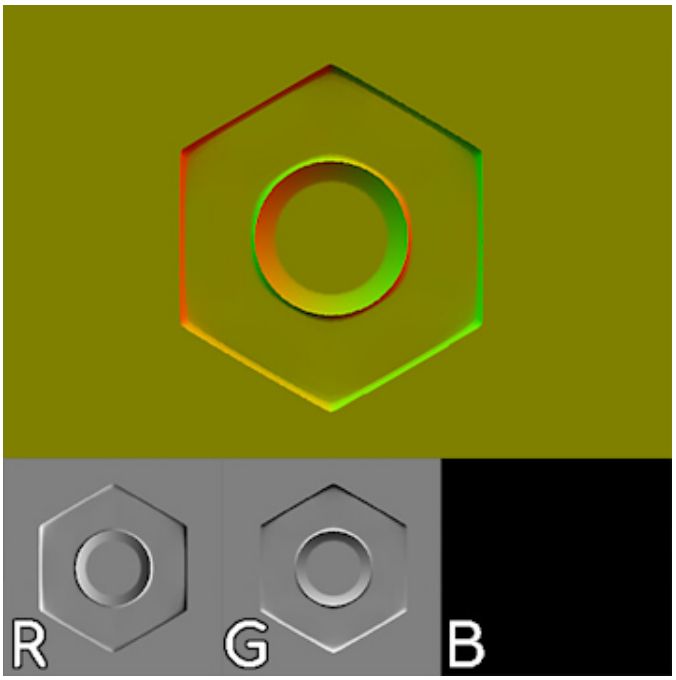
Tangent Space normal map

This is the most common normal map referred to as `purple normal map` or `blue normal map`. It modifies the normal direction of the model, based on the normal direction of its vertices. It is used by the `Need for Speed™ Most Wanted (2012)` version of the `Chameleon Engine`.



2-channel tangent space normal map

This normal map stores information on two channels to reduce memory usage, the computer can calculate the third one increasing processing usage. By discarding the blue channel it appears `yellow`. This normal map type can be seen used in beta versions or different game engines.



For this tutorial, I will be using Acura's badging normal map from Need for Speed™ (2015):

The easiest way to convert a **2-channel tangent space normal map** is by opening the texture in **GIMP** and decomposing it into greyscale layers `Colors > Components > Decompose...` then changing the blue channel from black to white:

After modifying the blue channel the texture can now be composed `Colors > Components > Compose...` to achieve this result similar to the three channel tangent space normal map:

WARNING! I advise against simply inverting the image colors, while it may seem like an even easier way, the channels for **red** and **green** may get inverted too in the process. This will make an incorrect result: