



# Object VR Creation

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## An Introduction

### Overview

It can be very helpful for viewers to see all sides of an object. This is particularly useful when explaining identifying features.

- Advantages.
  - Most VR software allows you to give the viewer movement and zoom capabilities.
  - Hotspots within the VR make it possible for the viewer to “move” from one location to another by linking to another VR image.
  - Hotspots also allow the viewer to go to a different webpage for more explanation of that feature.
- Disadvantages.
  - Special software is required. Software that will combine the images together and/or software to create the VR. Graphic editing software may be necessary as well.
  - As with most technology, there is a learning curve for the use of the necessary hardware and software.
  - The VR will require a plug-in to run (Quick-time or Flash).
  - Depending upon the size of the photographs (which affects the final file size), the quality of the resulting image may not be very high.

### Setup

The CITT faculty lab has all of the equipment necessary to create an object VR. This equipment is available for faculty use at no cost but it cannot be removed from the CITT lab.

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## Backdrop

A solid color background will make it easier to see the object as well as giving it a professional look. Consider the color of the item when you choose your backdrop. If you plan to edit the photos to completely remove the background, be sure to choose a color that is not found in the object. Then you can easily select that color and delete it.



The CITT VR lab has backdrops in three different colors; blue, green and mottled grey. There are blue and green covers for the turntables as well.

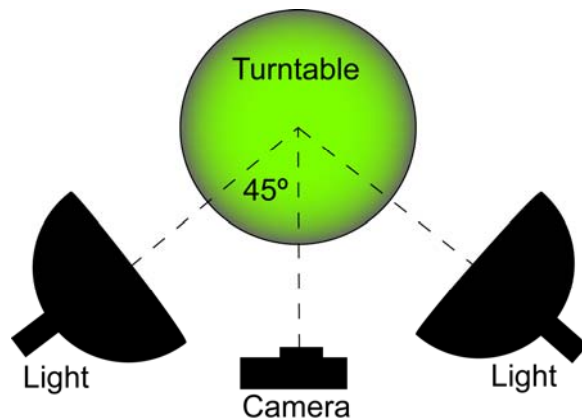
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## Tripod

A tripod is essential for VR creation. It is impossible to hold the camera in the same location for the length of time it takes to shoot the necessary pictures. Any tripod will serve as long as it holds the camera securely. The CITT VR lab has a tripod available for use with the CITT Canon camera.

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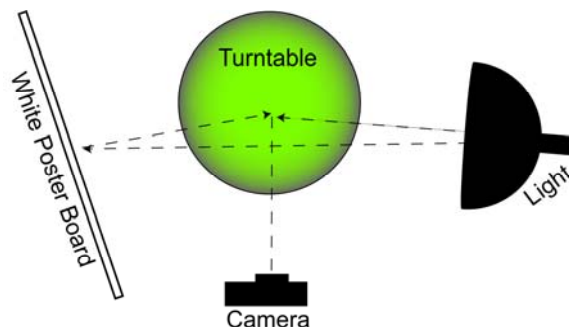
## Lighting



The general lighting setup will put the camera directly in front of the object and lights at a 45° on each side of the camera.

It is important to check the image on the computer rather than relying on the camera's viewer. Once you have checked the image it may be necessary to adjust lighting and or camera settings.

If you find that two lights wash out your object, use large white sheets of poster board or foam core on one side to create indirect lighting. These can be clamped onto the light tripods.



It is important for the lighting to remain the same for all of the pictures in the series.



Virtually any camera can be used to create an object VR. The camera available for faculty use at CITT is a Canon PowerShot G5. This camera is not a single lens reflex.



If you are using the Canon camera in the CITT lab, follow these setup instructions:

- Check the compact flash disk to make sure any pictures have been removed and it is blank.
- Insert the compact flash disk into camera (right side).
- Plug camera into an outlet (left side).
- Turn camera on by pushing the on switch to the left.
- Turn flash off (upper left back of camera). Do not use flash to take these pictures.
- Select **M1** resolution settings (page 55 of manual):
  - Select **Display**
  - Select **Func**
  - Use the toggle to select **M1**
  - Select **Superfine** compression the same as M1 settings above (page 55 of manual).
- Select **Av** mode from the dial at the right hand side/top of camera. Turn the dial in front of shutter button to select lower aperture value. It will take some experimentation to find the best setting. This setting focuses on the front object and fades the background (see page 79 of manual).
- Choose **Spot Metering** by toggling through the middle button on the upper left hand side of the back of the camera. Use **Spot Point Meter** (page 83 of manual).
- Select **Macro Mode** (picture of flower) upper left side back of camera if you are photographing something small.
- If you need to, change the exposure by clicking on the top of the toggle button (right side, back of camera). Then move the dial that is in front of the shutter button to lighten or darken image. (page 85 of manual).



- Adjust the white balance by selecting the bottom of the toggle button on the back, right side of camera. Toggle through the choices. Choose the setting which gives you the best results. This may require experimentation.
- In the Av mode, the camera automatically sets ISO.

## Turntable



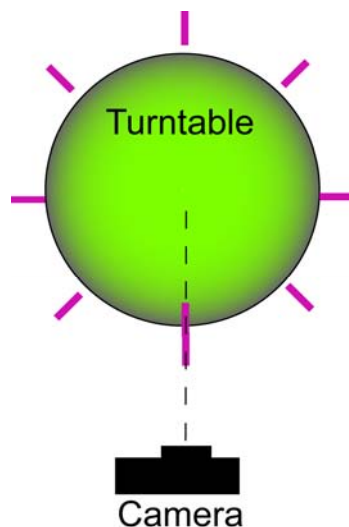
You'll need some type of turntable that allows you to spin the object around. This could be as low-tech as a lazy Susan, or a motorized turntable that is controlled by a computer.

The CITT VR lab has a small turntable that is controlled manually as well as a larger turntable that can be programmed in the computer.

More pictures will create a smoother turn. It will also increase file size. Consider the importance of a smooth movement weighed against a speedy download time when choosing the number of turntable stops.

### Manual Turntable

If you are using the manual turntable or a lazy Susan, use post-it notes or pieces of colored tape to divide the table under the turntable into equal segments.



- Place tape on the turntable to mark a start point.
- Take the first photo.
- Use the switch located on the cord to move the turntable until the start mark lines up with the next table mark.
- Take the next photograph and repeat until the turntable has rotated 360°.

### Automatic Turntable

The larger turntable in the CITT VR lab can be plugged into the computer for automatic





operation. Once the turntable is plugged in, follow these steps:

- Open eMCee Turntable Software from the Desktop.
- Begin by pressing the **Set** button. This resets the turntable to zero.
- Change the Increment value to 36. This will give you a total of 10 different views of your object – generally you shouldn't need any more than that.
- Make sure the **Full Circle** checkbox has a check in it.
- Adjust the Delay to 10. This is the number of seconds you will have to shoot a picture before the turntable begins rotating again.)
- Click the **Preferences** button in the lower-left corner.
- Change the Steps per Revolution to 14150.
- Change the Move Speed value to 600.
- Click the radio button next to Com 1.
- Click **Ok**.
- Once again click the **Go** button to make sure the turntable is at its starting position. Now you are ready to take the photographs.
  - Click **Start**.
  - Shoot your first picture! It will take 10 seconds before the turntable begins to spin, however this first position is one of the 10 images you'll need.
  - The turntable will spin, and stop again for another 10 seconds. Each time it stops, shoot a picture!
  - The turntable will stop rotating at 324 degrees – this is normal.
  - Once you've taken your images, once again hit the **Go** button.
  - When the turntable finishes rotating, close eMCee.

## Editing

## Photoshop

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Use the graphics program that you prefer to add notations, measurements or arrows pointing out features of the object.

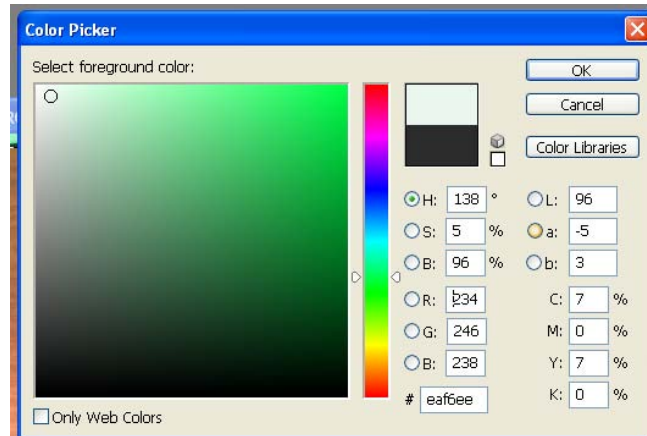
If you desire, remove the background or change the background color. If you have used a contrasting background, this can be done easily in Photoshop by following these steps:

- Choose **Select > Color Range** from the menu at the top of the screen.
- Click the eyedropper on the background.





- Use the **Color Picker** to choose the desired color:



- Click on the swatches in the tool box to open the Color Picker
- Use the mouse to select the desired color.
- Use the paint bucket from the toolbox to fill the selected area.

The background will need to be replaced on all of the photographs. Save the files in the .jpg format.

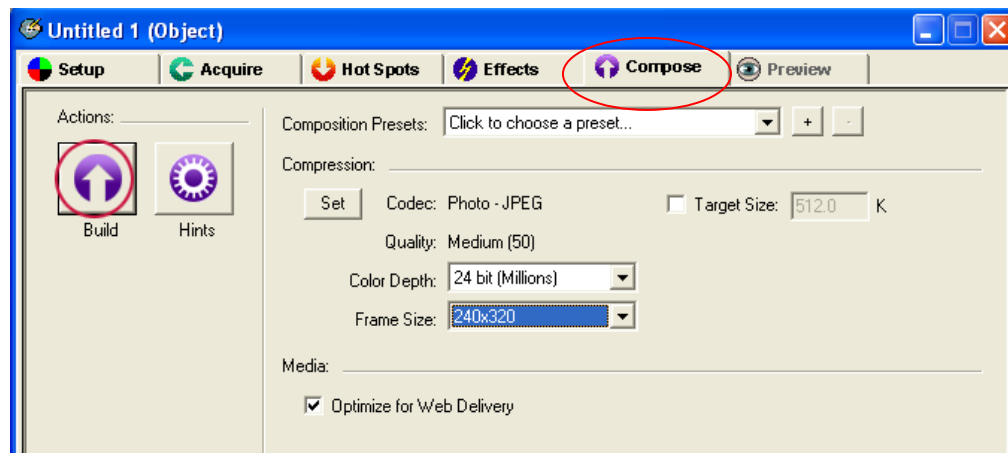
## VR Worx

The VR creation program available for faculty use at CITT is VR Worx. This program enables you to create both object and panoramic VRs. The method for object VRs is outlined here.

- **VR setup**
  - When the program is opened, an Open Project dialog box opens by default. Press **Cancel**.
  - Select **File > New...**
  - Select the **Create Object** button and Press **OK**.
  - Make sure the Image Size pull-down menu is set to Auto
  - Set the Source pull-down menu to PLUG-IN Image File
  - Move down the Horizontal settings and make sure the Sweep is set to 360° and Columns is set to the number of photos (this would be 10 if you selected 36 for increment field in eMCee)
- **Import the images**
  - Click the **Acquire** tab at the top of the screen.
  - Select **Multiple**.
  - Navigate to, and highlight all of your desired images.
  - Press **Add and Done**.
- **Add the hotspots.**
  - Select the **Hot Spots** tab from the top of the window.
  - Select one of the shape tools from the menu on the left side of the screen.



- Draw the desired Hot Spot shape.
- Double click on the shape you have drawn to add a URL link.
  - The **Hot Spot Dialog** box will open.
  - Select **URL** from the **Kind** window.
  - Leave the default **ID** or change it as you prefer.
  - Change the **Name** to whatever you like. This name will appear when the user rolls the mouse over the hot spot.
  - Select the **URL** tab and type in the desired URL.
- Click **OK**.



- **Create the VR**
  - Click the **Compose** tab at the top of the screen.
  - Set the compression settings as you desire by clicking the **Set** button.
  - Set the other options as you like. When in doubt, use the default setting.
  - Click the **Build** button
  - Once the program finishes processing the images, click the **Preview** tab at the top of the screen.
  - In the Preview window, you can drag your cursor across the image to see a demonstration of how your final VR Movie will work.
  - When you're ready to save, click the **Export** button.
  - Type in a filename, select where you would like your movie to be saved, and press **Save**.

## 📁 Resources

There is a variety of software and equipment available for creation of VRs. Most software is available for a free trial download. The trial version may work only for a limited time or it may not allow you to save or output your work.



## Tutorials

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**Exploring Object Virtual Reality: A Manual for Libraries and Museums.** Washington University School of Medicine. How-to guide for creation of object VRs. <http://beckerexhibits.wustl.edu/3D/howto/index.html>

**Studio Lighting Tips.** Cornell University College of Agriculture and Life Sciences. This website contains useful information on lighting to bring out details and features of plants.

<http://www.plantpath.cornell.edu/PhotoLab/KnowledgeBase/StudioLighting/Lighting.htm>

## Software

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**QuickTime Player** from Apple is finally available as a stand-alone (users can now install without having to install i-tunes.)

<http://www.apple.com/quicktime/download/standalone.html>

**VR Toolbox** makes VR Worx. VR Worx allows you to create VRs from panoramic photos as well as object VRs. You can add hotspots and links using this program. <http://www.vrtoolbox.com/vrthome.html>

## Examples

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**Cropview.** Lori Unruh-Snyder. University of Florida IFAS. This site utilizes VRs of seeds for identification. <http://cropview.ifas.ufl.edu/>

**Virtual Field Day—Irrigation.** Rafa Munoz-Carpena, Michael D. Dukes. University of Florida IFAS. VRs are used to show the details of soil moisture sensors. <http://vfd.ifas.ufl.edu/gainesville/irrigation/sensors.html>

**QTVR Anatomical Resource.** Department of Anatomy—Wright State University School of Medicine. This site contains links to anatomy VRs. <http://www.anatomy.wright.edu/QTVR/index.html>