

UV Operators

Blender offers several ways of mapping UVs, going from simple ones that merely project the mesh's vertices onto a plane to more advanced ones.

Unwrap

Reference

Editor:
3D Viewport

Mode:
Edit Mode

Menu:
UV ▸ Unwrap ▸ Angle Based, Unwrap ▸ Conformal, Unwrap ▸ Minimum Stretch

Shortcut:
U

Reference

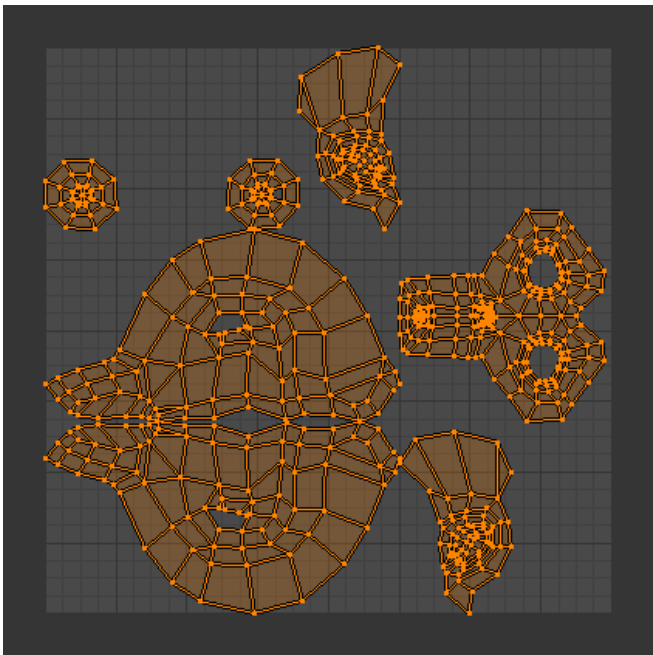
Editor:
UV Editor

Mode:
Edit Mode

Menu:
UV ▸ Unwrap ▸ Unwrap ▸ Angle Based, Unwrap ▸ Conformal, Unwrap ▸ Minimum Stretch

Shortcut:
U

Cuts the selected faces along their [seams](#), flattens them, and lays them out on the UV map. Previously existing UV coordinates are overwritten. Useful for organic shapes.



Result of unwrapping Suzanne.

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Method

Angle Based:

Uses Angle Based Flattening (ABF). This method gives a good 2D representation of a mesh.

Conformal:

Uses Least Squares Conformal Mapping (LSCM). This usually results in a less accurate UV mapping than Angle Based, but performs better on simpler objects.

Minimum Stretch:

Uses Scalable Locally Injective Mapping (SLIM). This tries to minimize distortion for both areas and angles.

Fill Holes

Virtually fill holes in the mesh before unwrapping, to better avoid overlaps and preserve symmetry.

Use Subdivision Surface

Use the new vertex positions that were calculated by the [Subdivision Surface Modifier](#) (rather than the original positions from before any modifiers are run).

Correct Aspect

Adjusts the UV mapping to account for the aspect ratio of the image associated with the material. This ensures that UVs are scaled correctly when unwrapping onto non-square textures.

For this option to work, the mesh must have a material with an [Image Texture node](#), and this node must be selected in the [Shader Editor](#).

Iterations Minimum Stretch

Number of iterations for the *Minimum Stretch* method, where each iteration reduces the distortion further.

No Flip Minimum Stretch

Disallow flipping faces. Allowing it sometimes results in less distortion when there are [pins](#).

Importance Weights Minimum Stretch

Lets you specify a vertex group to manually influence the size of certain faces in the UV map. Faces around high-weight vertices will take up more space in the UV map than ones around low-weight vertices.

When enabling this option, two more appear:

Weight Group

The name of the vertex group to use.

Weight Factor

A global factor to multiply all the weights by. A bigger number will result in a more exaggerated difference between high-weight and low-weight areas.

Margin Method

The meaning of the *Margin* parameter, which determines the size of the empty space between UV islands.

Scaled

The *Margin* is a more or less arbitrary measure with no direct relation to the sizes of the UV islands or the texture.

Add

As above, but without the internally calculated scaling factor.

Fraction

The *Margin* is a fraction of the UV bounds. This means that, if you have a 1024x1024 texture and set the *Margin* to 1/1024, each UV island will have a margin of 1 pixel around it (and islands will be no closer than 2 pixels to each other).

Margin

How much empty space to leave between islands. Controlled by *Margin Method*.

Smart UV Project

Reference

Editor:

3D Viewport, UV Editor

Mode:

Edit Mode

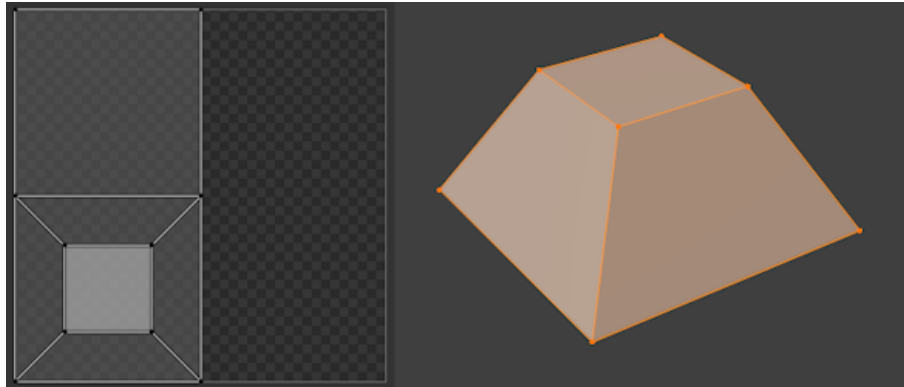
Menu:

UV ▸ Unwrap ▸ Smart UV Project

Shortcut:

U

Examines the angles between the selected faces, cuts them along any sharp edges, then projects each separated group of faces along its average normal and lays it out on the UV map. You can also set up [seams](#) for additional cutting. This is a good method for, say, mechanical objects or architecture.



Smart UV project on a truncated pyramid.

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Angle Limit

The maximum allowed angle between the normals of adjacent faces before they're split off from each other. A low limit will create lots of small UV islands with little distortion, while a high limit will create a few large islands with potentially more distortion.

Margin Method

The meaning of the *Island Margin* parameter, which determines the size of the empty space between UV islands.

Scaled

The *Island Margin* is a more or less arbitrary measure with no direct relation to the sizes of the UV islands or the texture.

Add

As above, but without the internally calculated scaling factor.

Fraction

The *Island Margin* is a fraction of the UV unit square. This means that, if you have a 1024x1024 texture and set the *Island Margin* to 1/1024, each UV island will have a margin of 1 pixel around it (and islands will be no closer than 2 pixels to each other).

Rotation Method

Axis-aligned

Automatically rotate to avoid wasting space.

Axis-aligned (Horizontal)

Rotate islands to be aligned horizontally.

Axis-aligned (Vertical)

Rotate islands to be aligned vertically.

Island Margin

How much empty space to leave between islands. Controlled by *Margin Method*.

Area Weight

With a value of 0, the projection vector of each face group is simply the average of its face normals. With a value of 1, it's an average that's weighted using the faces' areas. Other values blend between the two.

Correct Aspect

Adjusts the UV mapping to account for the aspect ratio of the image associated with the material. This ensures that UVs are scaled correctly when unwrapping onto non-square textures.

For this option to work, the mesh must have a material with an [Image Texture node](#), and this node must be selected in the [Shader Editor](#).

Scale to Bounds

Stretches the resulting UV map to fill the complete texture.

Lightmap Pack

Reference
Editor: 3D Viewport, UV Editor
Mode: Edit Mode
Menu: UV ▸ Unwrap ▸ Lightmap Pack
Shortcut: U

Places each selected face separately on the UV map. Lightmaps are commonly used for baking lighting information into a texture for use in realtime rendering – as such, they prioritize using as much of the texture as possible, typically resulting in a disconnected and distorted UV map that would be unsuitable for manual texturing work.

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Selection

Selected Faces

Only unwraps the selected faces.

All Faces

Unwraps the whole mesh.

Share Texture Space

You can use [Multi-Object Editing](#) to generate UV maps for multiple meshes at the same time. When *Share Texture Space* is enabled, the UV maps won't overlap each other, so that you can later use the same lightmap texture for all the meshes.

New UV Map

Creates a new UV map instead of overwriting the currently selected one. See [UV Maps](#).

Pack Quality

Higher values result in a UV map that wastes less space (but also takes longer to calculate).

Margin

How much empty space to leave between the faces in the UV map.

Follow Active Quads

Reference
Editor: 3D Viewport, UV Editor
Mode:

Edit Mode

Menu:

UV ▸ Unwrap ▸ Follow Active Quads

Shortcut:

U

Starts from the active quad and recursively attaches its neighboring, selected mesh quads to its pre-existing UV quad. Non-quad faces are ignored.

Note

Because the active quad's UV layout is left unchanged, you'll typically want to make sure it has the same shape in the UV map as on the mesh before running this unwrap (e.g. by running another type of unwrap on just that face). Otherwise, the distortion will spread to all the other faces.

Note

The resulting UV map may go out of bounds. You can fix this by manually scaling it down or by using [Pack Islands](#).

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Edge Length Mode

How to calculate the lengths of the UV edges for the newly attached quads.

Even

Give each new UV edge the same length as the UV edge it's extending, regardless of its length on the mesh.

Length

Give each new UV edge a length that's proportional to its length on the mesh.

Length Average

Give each new UV edge a length that's proportional to the average edge length in its [edge ring](#) on the mesh.

Cube Projection

Reference

Editor:

3D Viewport, UV Editor

Mode:

Edit Mode

Menu:

UV ▸ Unwrap ▸ Cube Projection

Shortcut:

U

Projects each selected face onto the most suitable side of a virtual cube, then places all these sides in the UV map, overlapping each other. If you don't want them to overlap, you can use [Pack Islands](#).

The cube is centered on the [Pivot Point](#) and aligned to the mesh's local axes.

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Cube Size

The size of the cube to project onto.

Correct Aspect

Adjusts the UV mapping to account for the aspect ratio of the image associated with the material. This assumes that UVs are scaled consistently.

Adjusts the UV mapping to account for the aspect ratio of the image associated with the material. This ensures that UVs are scaled correctly when unwrapping onto non-square textures.

For this option to work, the mesh must have a material with an [Image Texture node](#), and this node must be selected in the [Shader Editor](#).

Clip to Bounds

Moves any out-of-bounds UVs to the nearest border.

Scale to Bounds

Stretches the resulting UV map to fill the complete texture.

Cylinder Projection

Reference

Editor:
3D Viewport, UV Editor

Mode:
Edit Mode

Menu:
UV ▸ Unwrap ▸ Cylinder Projection

Shortcut:
U

Projects the selected faces onto a virtual cylinder, then unrolls that cylinder. The cylinder is centered on the [Pivot Point](#), which is normally the averaged-c position of the selected faces; however, you can also move it to a different place using e.g. the [3D Cursor](#).

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Direction, Align

The direction of the cylinder’s central axis.

View on Equator

Use an axis that’s perpendicular to the viewing direction in the 3D Viewport. If *Align* is *Polar ZX*, use the vertical axis of the viewing plane it’s *Polar ZY*, use the horizontal one.

View on Poles

Use an axis that’s parallel to the viewing direction in the 3D Viewport. Depending on *Align*, the cylinder will be rotated by 90° around its a and the UV map will be shifted horizontally by a quarter.

Align to Object

Use the object’s local Z axis. Depending on *Align*, the cylinder will be rotated by 90° around its axis and the UV map will be shifted horizontally by a quarter.

Pole

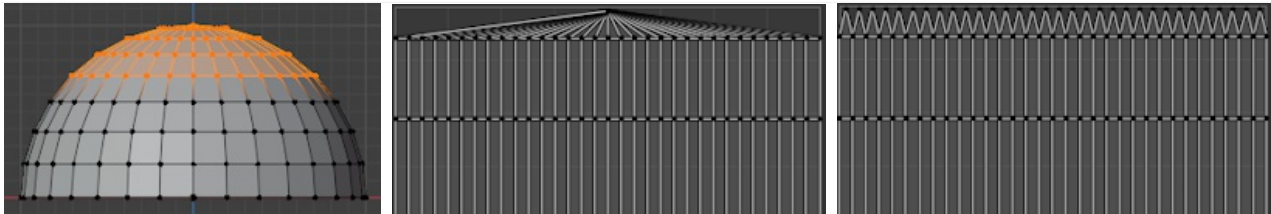
How to handle vertices that lie on the cylinder’s central axis.

Pinch

Place all UV versions of the vertex at the same U coordinate. This tends to result in heavily distorted UV faces.

Fan

Place each UV version of the vertex at a U coordinate that minimizes distortion.



Unwrapping the top of a dome.

Pole set to Pinch.

Pole set to Fan.

Preserve Seams

Cut the mesh along its seams before projecting.

Radius

Half the height of the cylinder (i.e. *not* its radius; we're only using the cylinder for projection, so its radius doesn't matter).

Correct Aspect

Adjusts the UV mapping to account for the aspect ratio of the image associated with the material. This ensures that UVs are scaled correctly when unwrapping onto non-square textures.

For this option to work, the mesh must have a material with an [Image Texture node](#), and this node must be selected in the [Shader Editor](#).

Clip to Bounds

Moves any out-of-bounds UVs to the nearest border.

Scale to Bounds

Stretches the resulting UV map to fill the complete texture.

Sphere Projection

Reference

Editor:

3D Viewport, UV Editor

Mode:

Edit Mode

Menu:

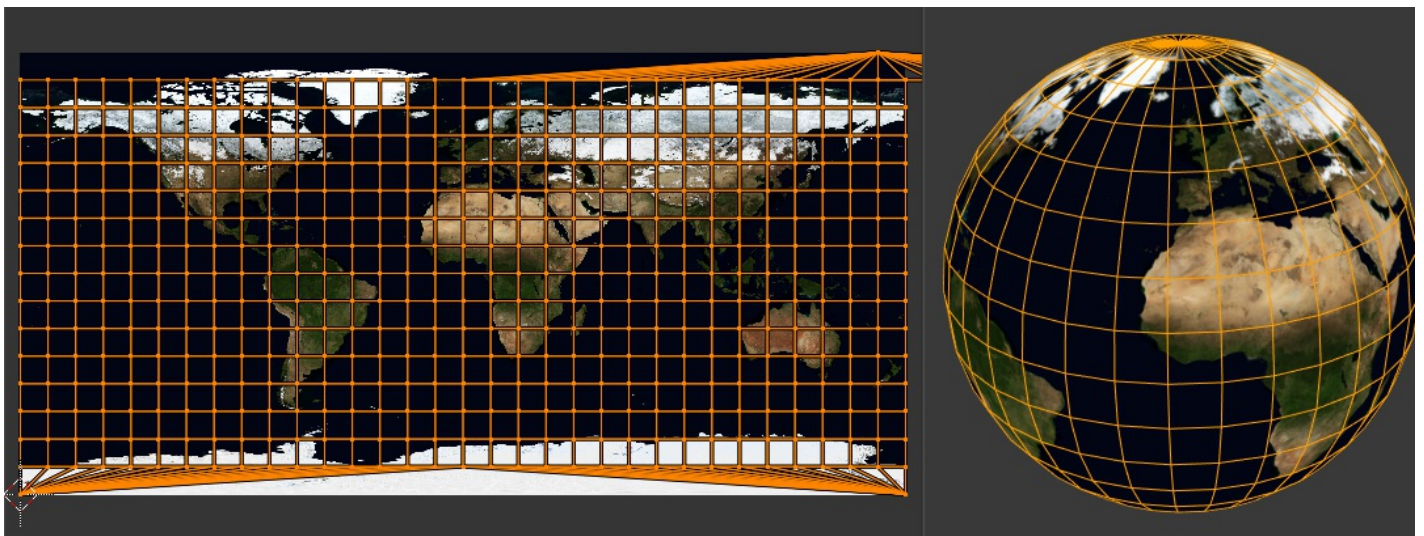
UV ▸ Unwrap ▸ Sphere Projection

Shortcut:

U

Projects the selected faces onto a virtual sphere, then flattens that sphere much like a world map: the latitude lines vertical and the longitude lines evenly spaced. This is useful for texturing spherical shapes such as eyes or planets.

The sphere is centered on the [Pivot Point](#), which is normally the averaged-out position of the selected faces; however, you can also move it to a different place using e.g. the [3D Cursor](#).



Using an equirectangular image with a Sphere Projection.

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Direction, Align

The direction of the sphere's vertical axis.

View on Equator

Use an axis that's perpendicular to the viewing direction in the 3D Viewport. If *Align* is *Polar ZX*, use the vertical axis of the viewing plane it's *Polar ZY*, use the horizontal one.

View on Poles

Use an axis that's parallel to the viewing direction in the 3D Viewport. Depending on *Align*, the sphere will be rotated by 90° around its vertical axis and the UV map will be shifted horizontally by a quarter.

Align to Object

Use the object's local Z axis. Depending on *Align*, the sphere will be rotated by 90° around its vertical axis and the UV map will be shifted horizontally by a quarter.

Pole

How to handle vertices that lie on the sphere's vertical axis. (See [Cylinder Projection](#) for an example.)

Pinch

Place all UV versions of the vertex at the same U coordinate. This tends to result in heavily distorted UV faces.

Fan

Place each UV version of the vertex at a U coordinate that minimizes distortion.

Preserve Seams

Cut the mesh along its seams before projecting.

Correct Aspect

Adjusts the UV mapping to account for the aspect ratio of the image associated with the material. This ensures that UVs are scaled correctly when unwrapping onto non-square textures.

For this option to work, the mesh must have a material with an [Image Texture node](#), and this node must be selected in the [Shader Editor](#).

Clip to Bounds

Moves any out-of-bounds UVs to the nearest border.

Scale to Bounds

Stretches the resulting UV map to fill the complete texture.

Project from View

Reference
Editor: 3D Viewport
Mode: Edit Mode
Menu: UV ▸ Project from View
Shortcut: U

Projects the selected faces onto the view plane. The UV map essentially becomes a wireframe picture of the mesh, taken in the 3D Viewport at the current viewing angle. Use this option if you are using a picture of a real object as a texture. You will get stretching in areas where the model recedes away from you.

Options

The [Adjust Last Operation](#) panel allows fine control over how the mesh is unwrapped:

Orthographic

Use an [Orthographic](#) projection instead of Perspective.

Camera Bounds

Map the borders of the image that would be rendered through the current camera to the borders of the UV map. This option only has an effect when viewing the scene through the camera; see [Viewing the Active Camera](#).

Correct Aspect

Adjusts the UV mapping to account for the aspect ratio of the image associated with the material. This ensures that UVs are scaled correctly when unwrapping onto non-square textures.

For this option to work, the mesh must have a material with an [Image Texture node](#), and this node must be selected in the [Shader Editor](#).

Clip to Bounds

Moves any out-of-bounds UVs to the nearest border.

Scale to Bounds

Stretches the resulting UV map to fill the complete texture.

Project from View (Bounds)

Reference

Editor:
3D Viewport

Mode:
Edit Mode

Menu:
UV ▸ Project from View (Bounds)

Shortcut:
U

The same as [Project from View](#), but with *Scale to Bounds* activated by default.

Reset

Reference

Editor:
3D Viewport, UV Editor

Mode:
Edit Mode

Menu:
UV ▸ Reset

Shortcut:
U

Resets the UV layout of each selected face to fill the whole UV area.