# Blender 2.9

# shortcuts

- SHIFT z: switch wireframe and object mode
- f: fill faces or edges between edges or vertex
- a: select all
- ALT+a: select nothing
- c: circle select
- b: box select
- SHIFT+b: zoom to box
- SHIFT+s: cursor move or selection move
- w: cycle between selecion modes

# numpad emulation

- edit → preferences → input → emulate numpa
- enable 1,2,3 switch faces,edges,vertex: edit → preferences → keymap → search mode
  - select mode toggle: ALT+1
  - select mode toggle: ALT+2
  - select mode toggle: ALT+3

## fix boolean operations

Sometimes boolean difference fails. Before try on each object:

- edit mode
- select all vertices A
- vertex (top menu) → Merge Vertices → by distance (this operation remove duplicate vertices)

## hide / show

- select (multiple) object and SHIFT+H to hide others
- recall others with ALT+H

## edit mode

TAB key

- activate Vertex select with 1, Edge select with 2 and Face select with 3

Create new object from selected vertex:

- duplicate with SHIFT+d
- ESC to exit from grab mode
- parent selected with “p”
- exit from edit mode with TAB and you will have two objects

CTRL+l: select touching vertex, edges, faces

Recalculate normals (to solve bevel problems): select all with “a” and hit “shift+n”

knife mode K:

- c for angle constrain
- z for cut all deeper edges

put vertex same X, Y or Z:

- position the 3d cursor at the Y location
- set the pivot point to the 3d cursor (. period key)
- then scale by zero on the Y axis (S Y 0)

# blendercam

Vevor 3018pro amazon

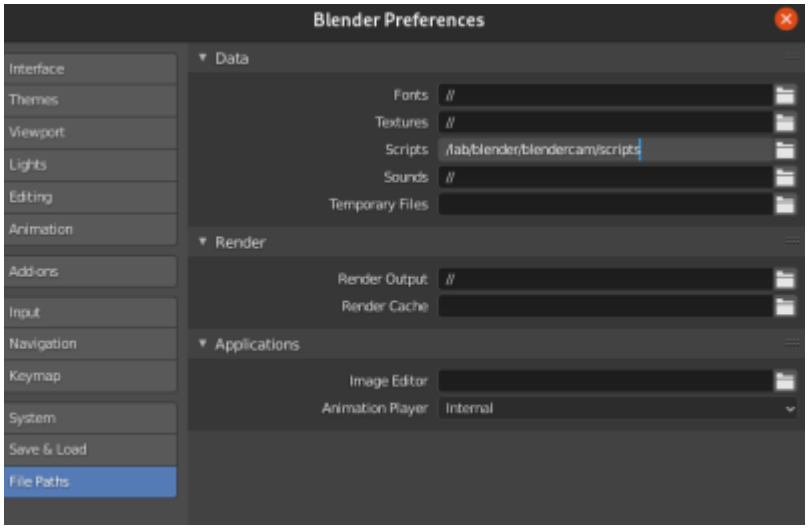
```
cd /lab/blender
git clone https://github.com/vilemnovak/blendercam.git
```

edit blender_manifest.toml commenting shapely wheels

install system packages

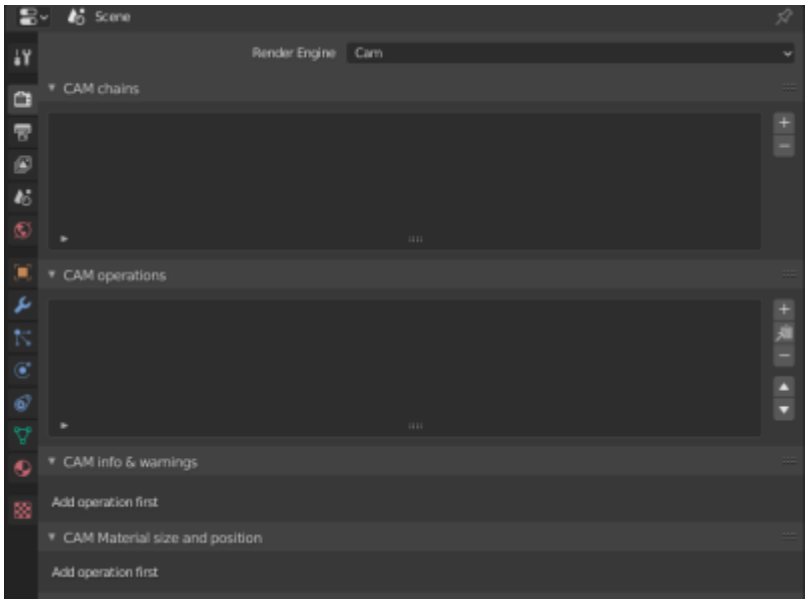
```
yay -S opencamlib python-numba python-shapely
```

setup blender scripts alternate file path

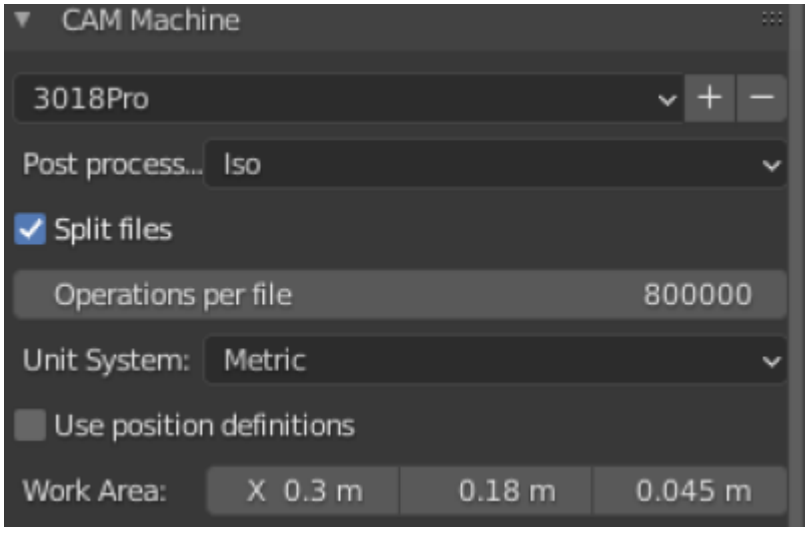



save preferences restart blender and enable blendercam add-on

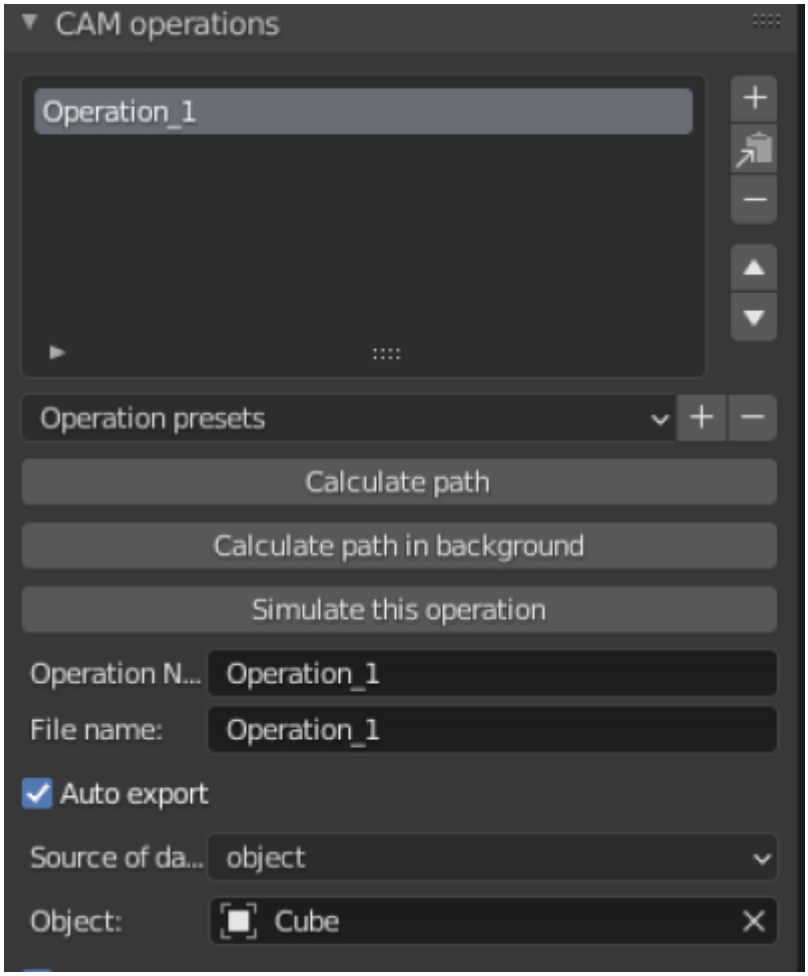
select CAM render engine in scene tab



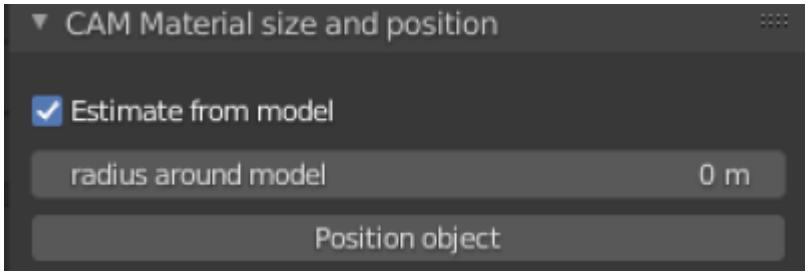

CAM machine → add preset '3018pro' with 'iso' post processing



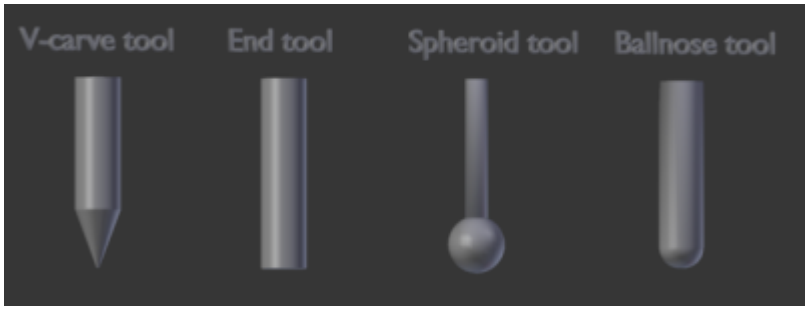

CAM operations → add one operation and select target object

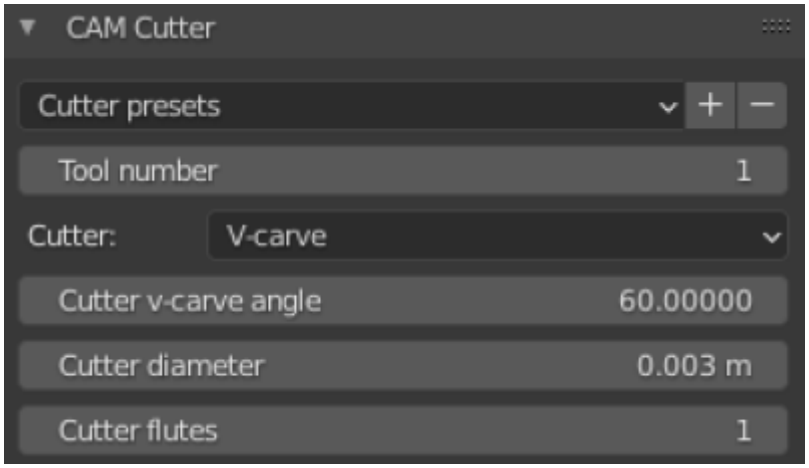



CAM material size and position → put object into job area with position button

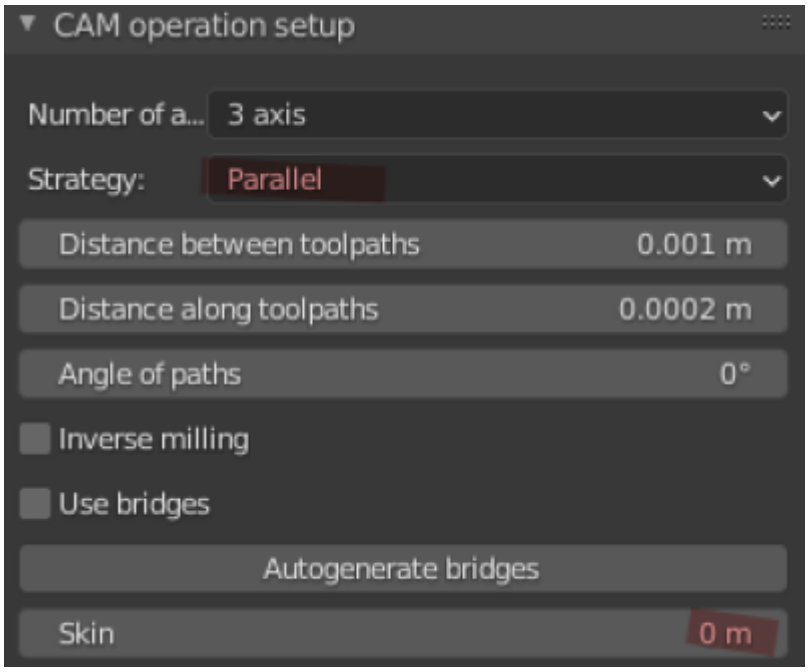



CAM cutter






CAM operation setup → strategy parallel and **skin**




header gcode to increase velocity spindle motor Genmitsu GS-775M 775 to 7000 (it double velocity x2)

```
M03 S1000
G4 P0.5
M03 S2000
G4 P0.5
M03 S3500
```

```
M03 S1000;G4 P0.5;M03 S2000;G4 P0.5;M03 S3500
```

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