



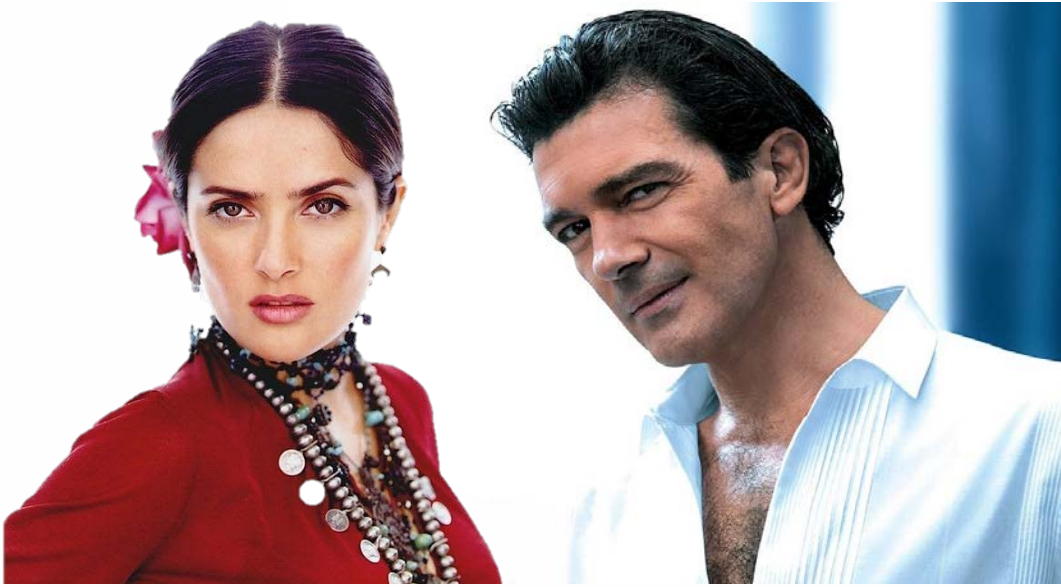
# *Match Move*

*Digital Visual Effects, Spring 2012*

*Winble 2012/04/26*

# WorkFlow

- Input
  - Video



- CGI Animation



# WorkFlow

- Output
  - Composite Video



# Setting

- **Blender**

- Version: 2.62
- Operating System
  - Windows XP/Vista/7 32/64 bits, Linux, Mac OS X
- Web Site: <http://www.blender.org/>

- **Voodoo**

- Version: 1.2.0 beta
- Operating System
  - Windows 95/98/NT/2000/Me/XP/Vista/7, Linux
- Web Site: <http://www.digilab.uni-hannover.de/>

- **Other Options**

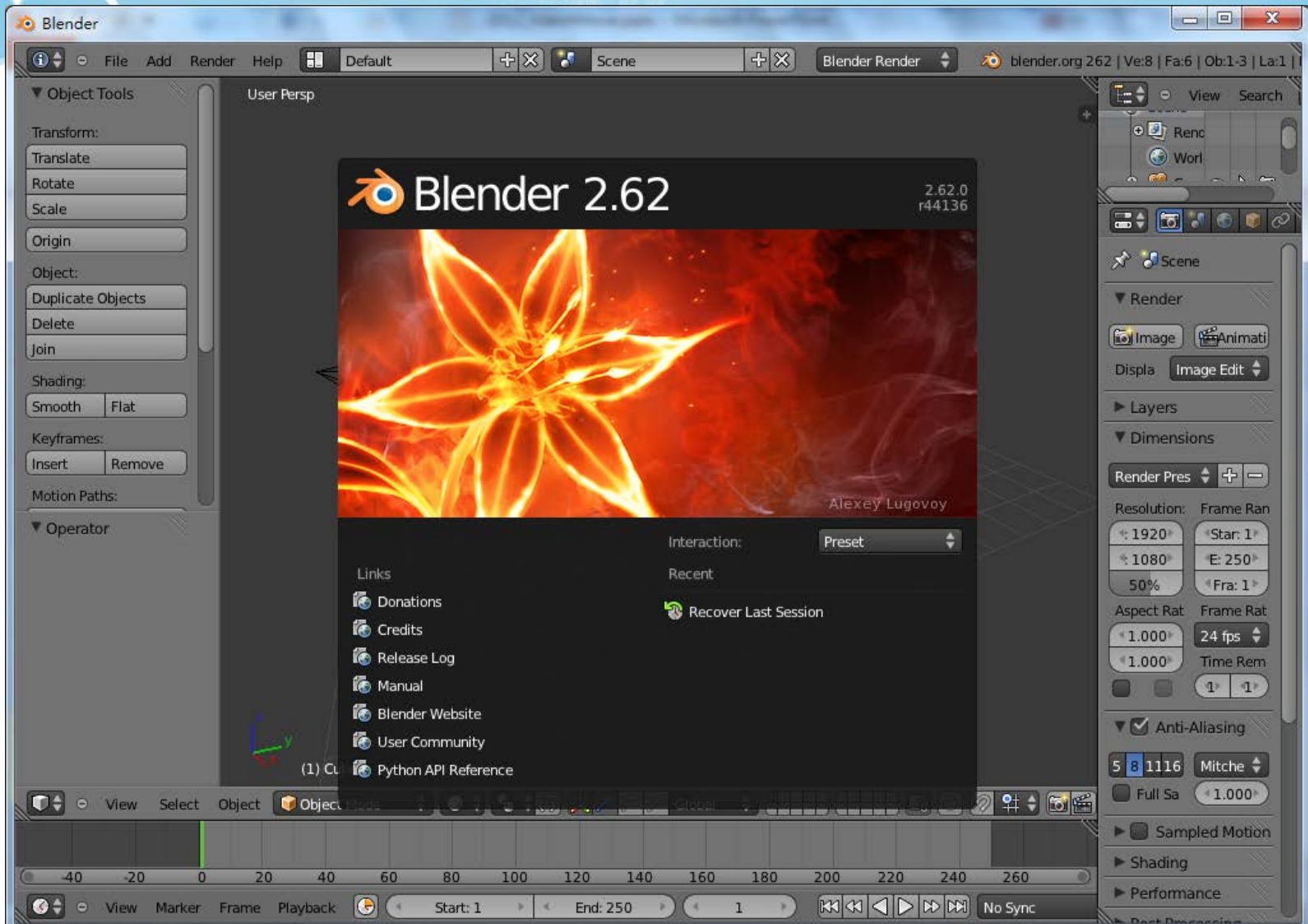
- Free: Blender + ICARUS
- Pay: boujou + 3D Max, boujou + Maya, ...

# Recipe: Get Image Sequence

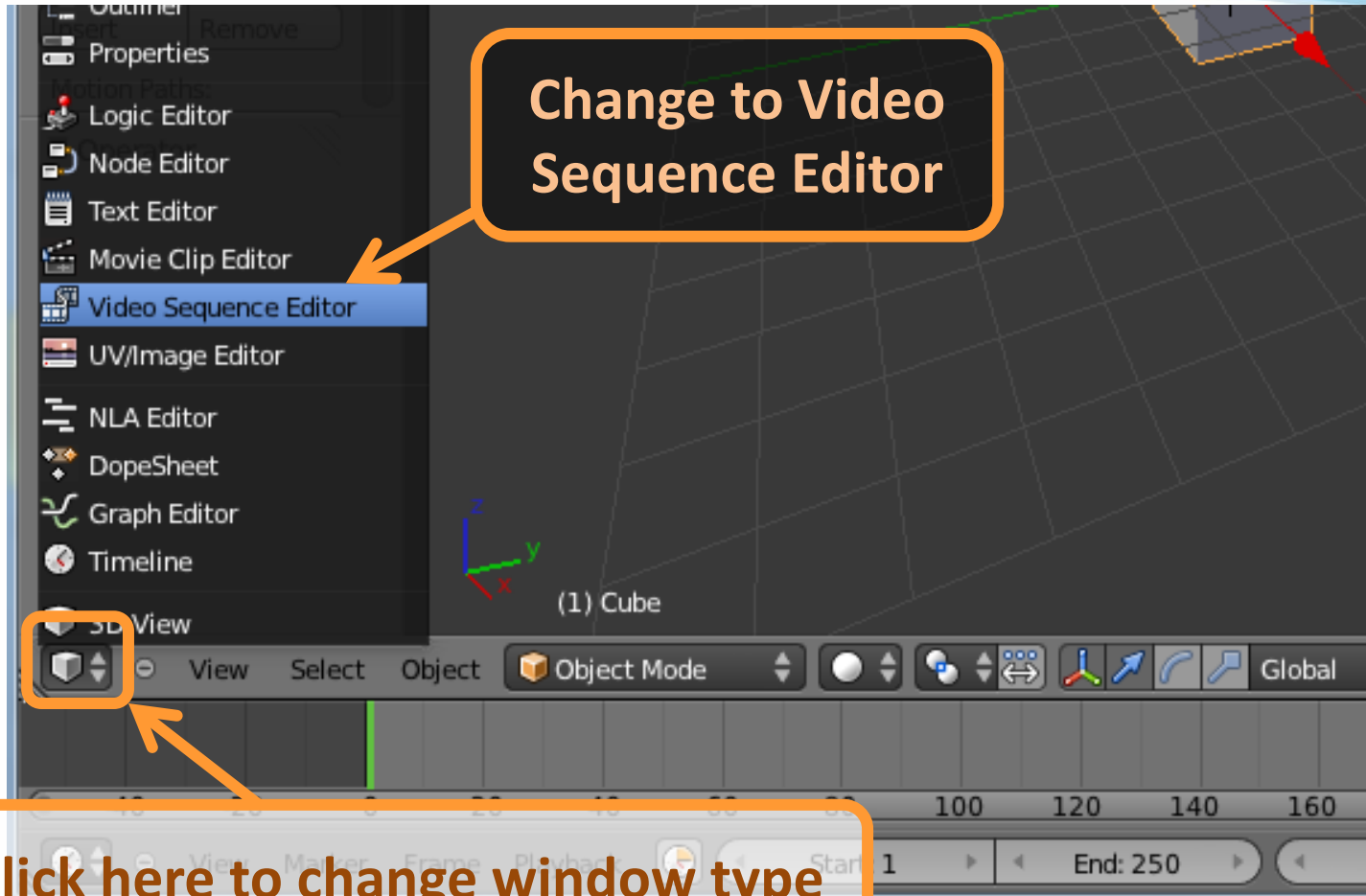
1. Open Blender
2. Add Video File
  - Change Window Type to **Video Sequence Editor**
  - Select **Add → Movie**
  - Drag the strip to Layer 1
3. Render Images
  - Choose **Render**
  - Frame
    - Set frame size and resolution
    - Choose output file type (**Targa**)
  - Time interval → Select start and end of the sequence
  - Choose output directory
4. Click **Animation** button



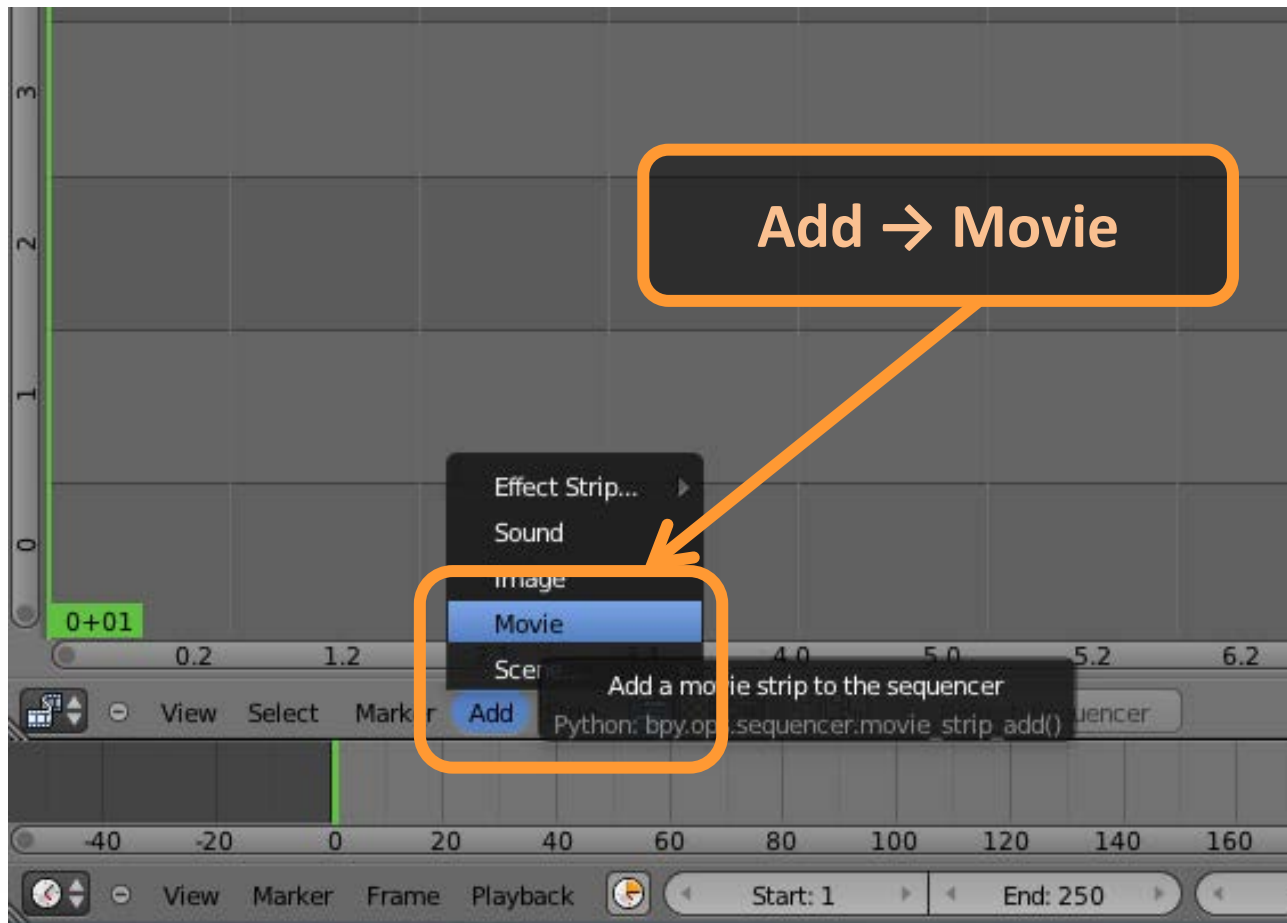
# Get Image Sequence : Blender Interface



# Get Image Sequence : Add Video File

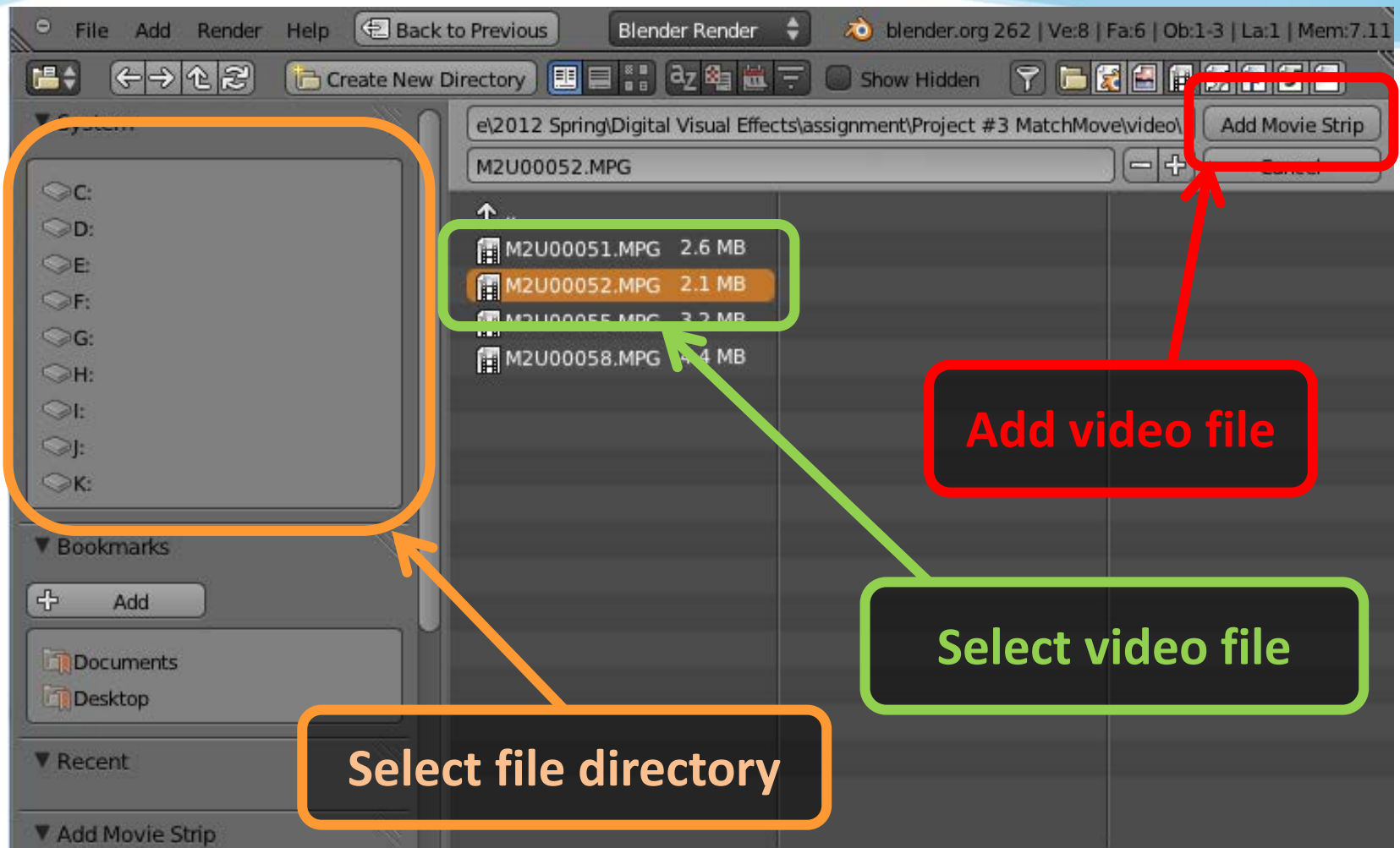


# Get Image Sequence : Add Video File

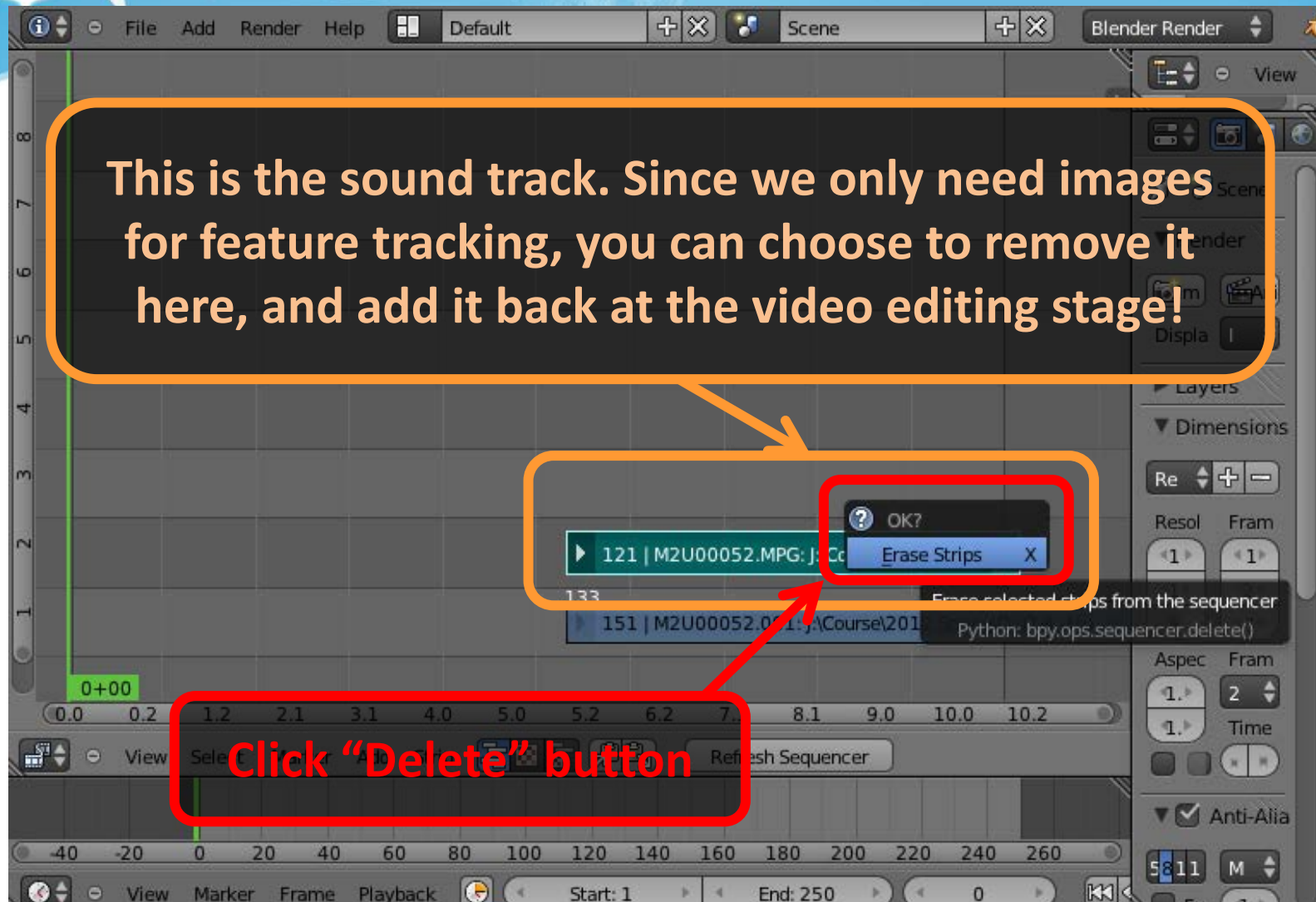




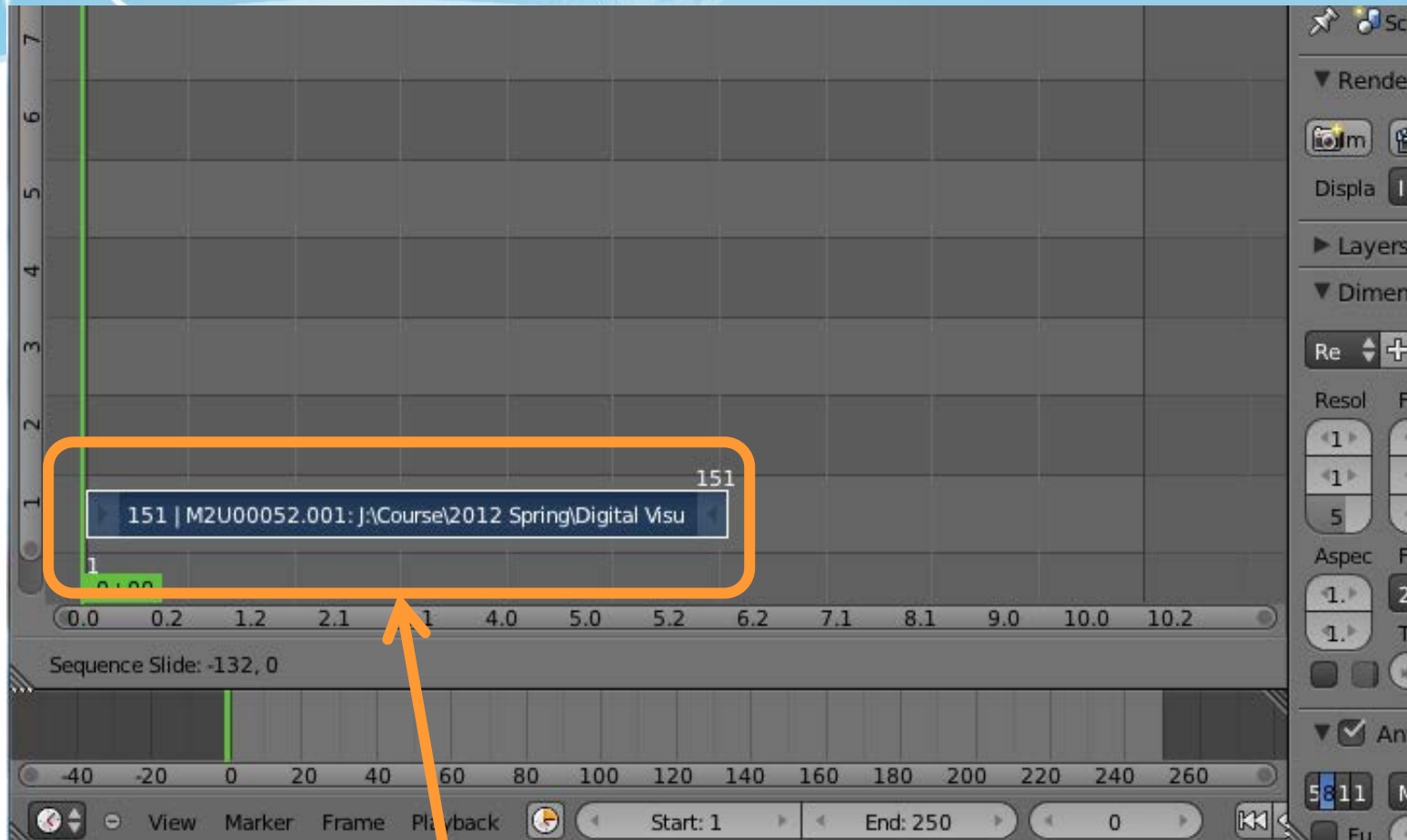
# Get Image Sequence : Add Video File



# Get Image Sequence : Add Video File

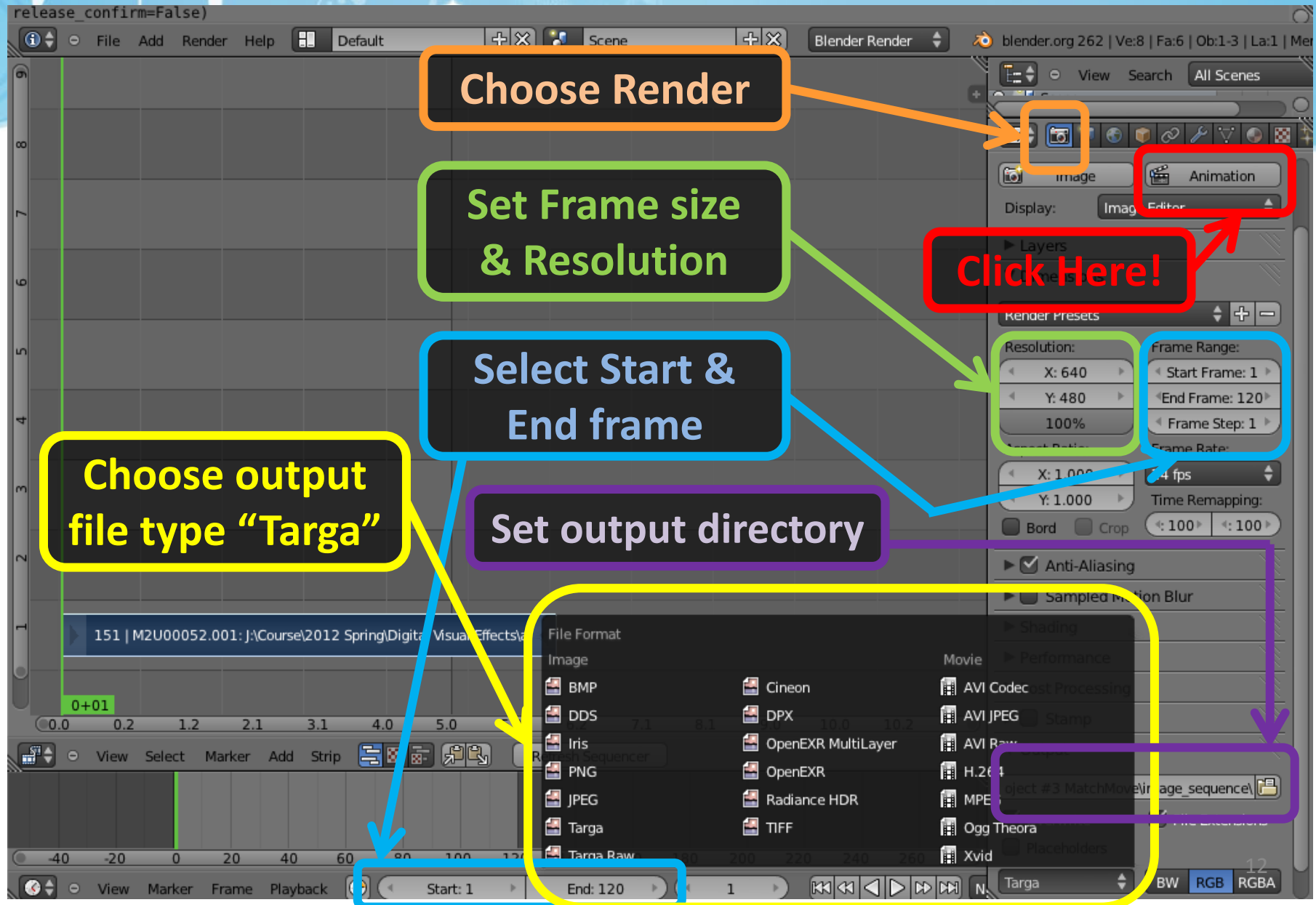


# Get Image Sequence : Add video file



**Right-click to Drag the strip to the "1<sup>st</sup> Frame" in Layer 1**

# Get Image Sequence : Render Images



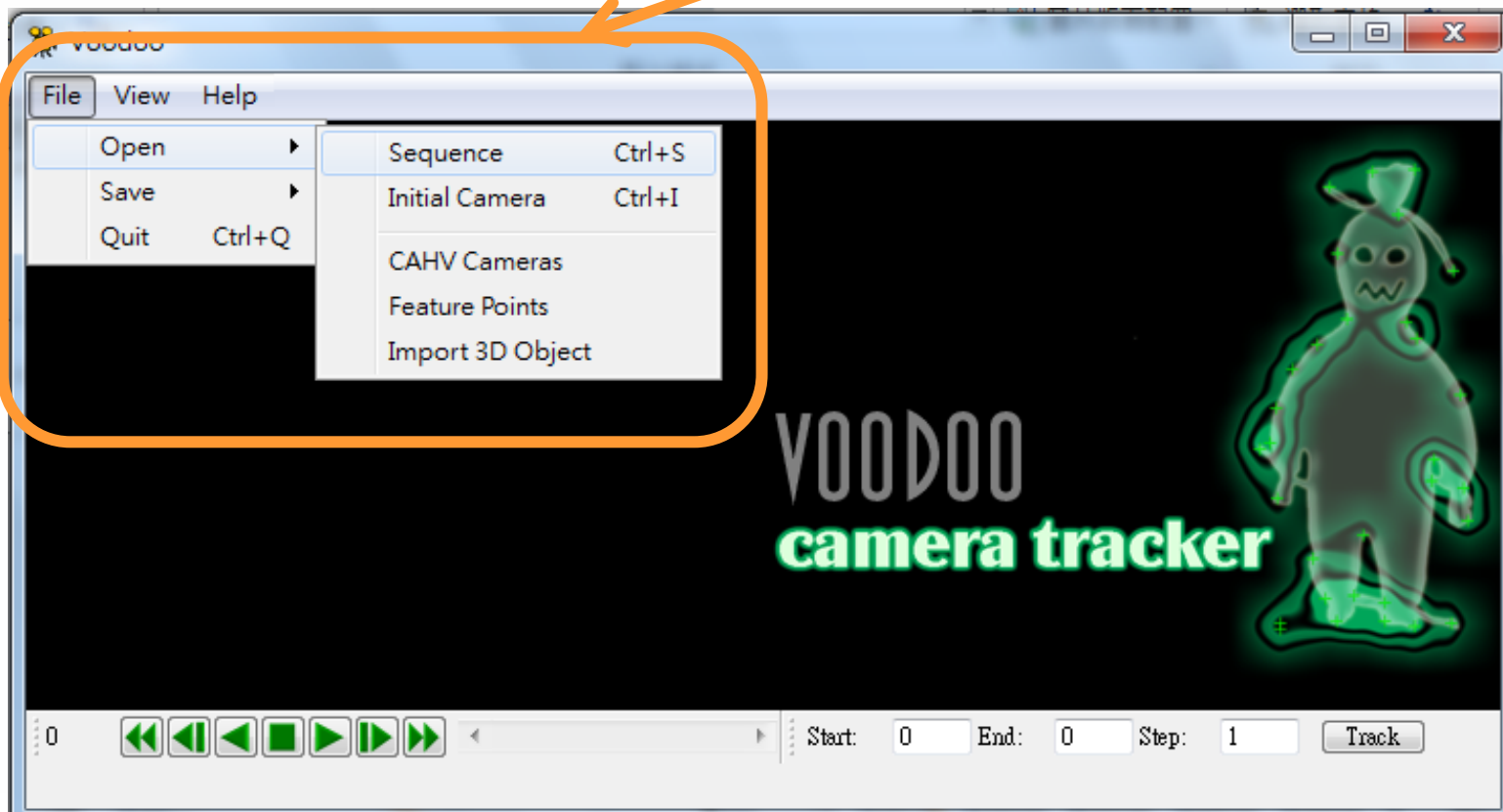
# Recipe: Calibration

1. Open Voodoo
2. Open Image Sequence
  - Select **File** → **Open** → **Sequence**
  - Select the first frame
  - Select Move Type “**Free Move**”
3. Track → Click **Track** button
4. Export Python Script
  - Select **File** → **Save** → **Blender Python Script**
  - Save .py file
    - Choose File type “Blender 2.5x and higher (\*.py)”

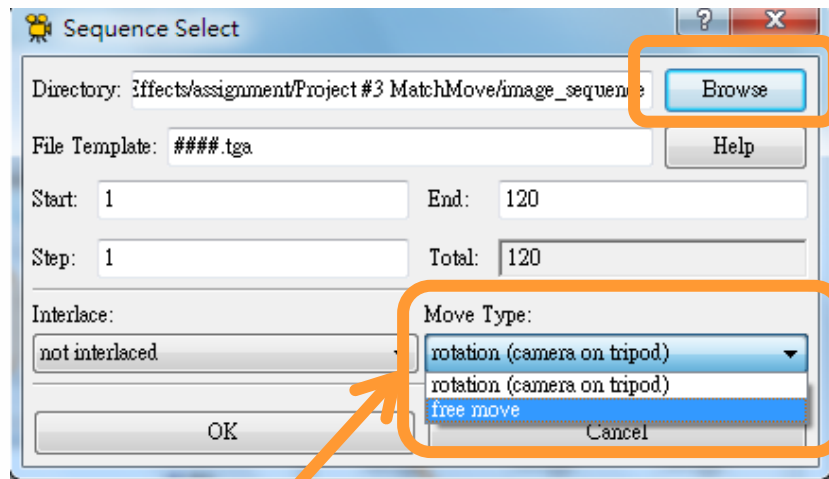


# Calibration : Choose Sequence

File → Open → Sequence



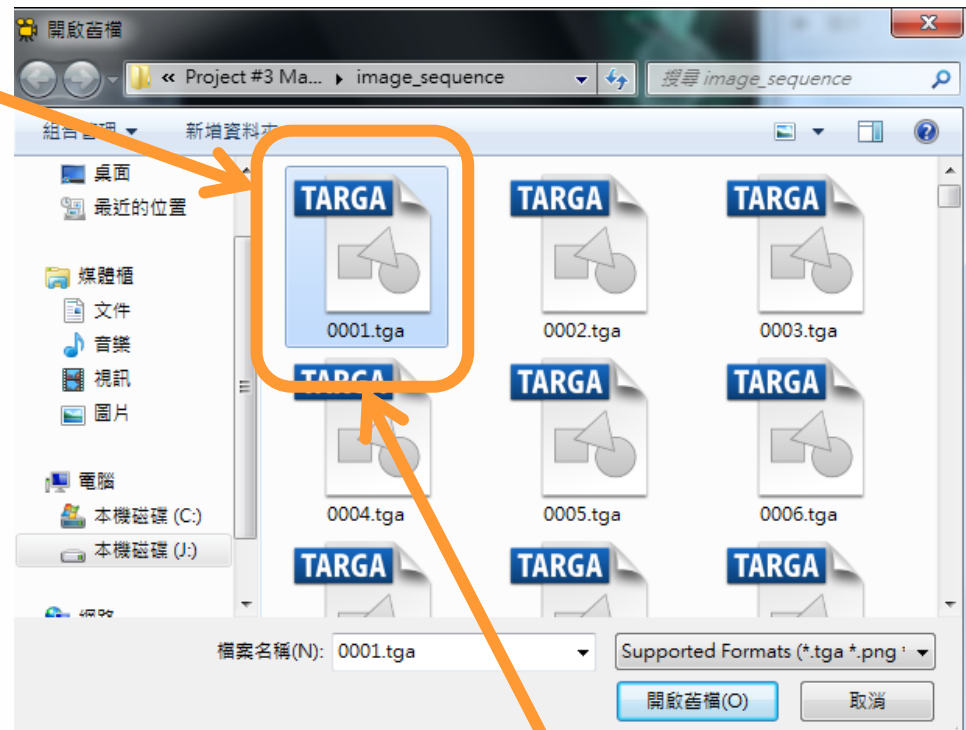
# Calibration : Choose Sequence



Choose “free move”

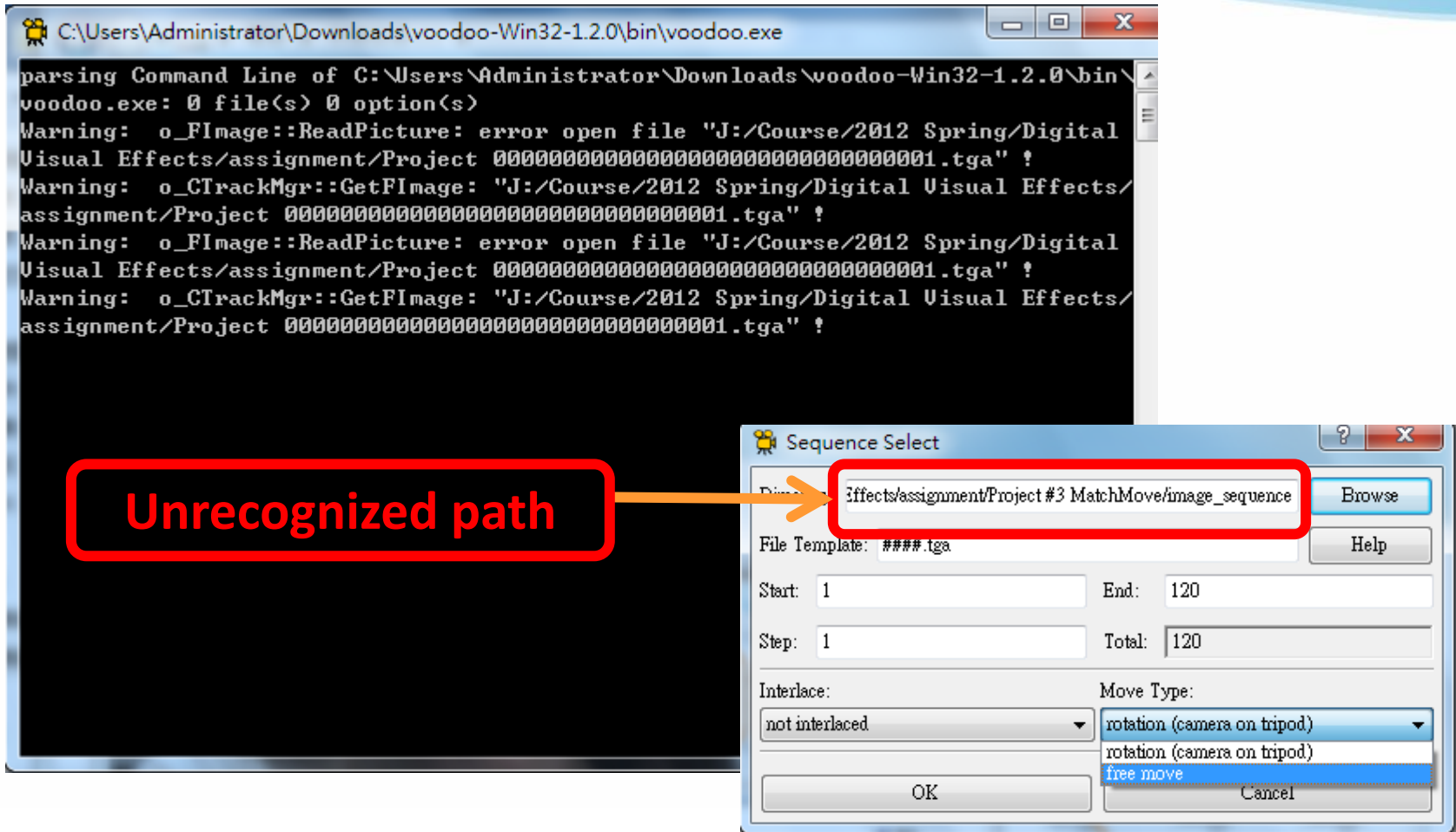
**Note!!!**

1. “free move” is for general moving conditions
2. “rotation (camera on tripod)” is for the special case with only the rotation

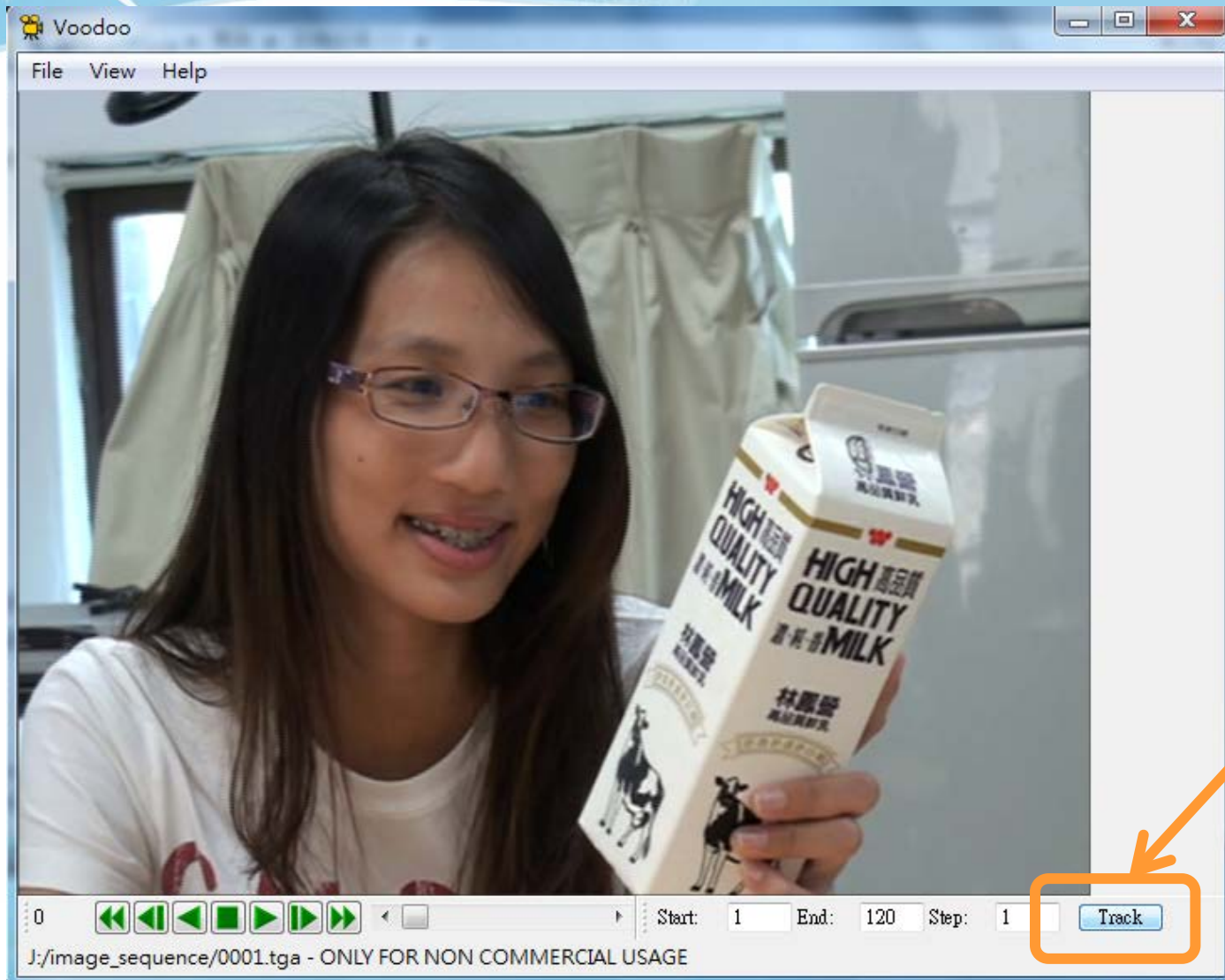


Only select 1<sup>st</sup> frame

# Calibration : Choose Sequence



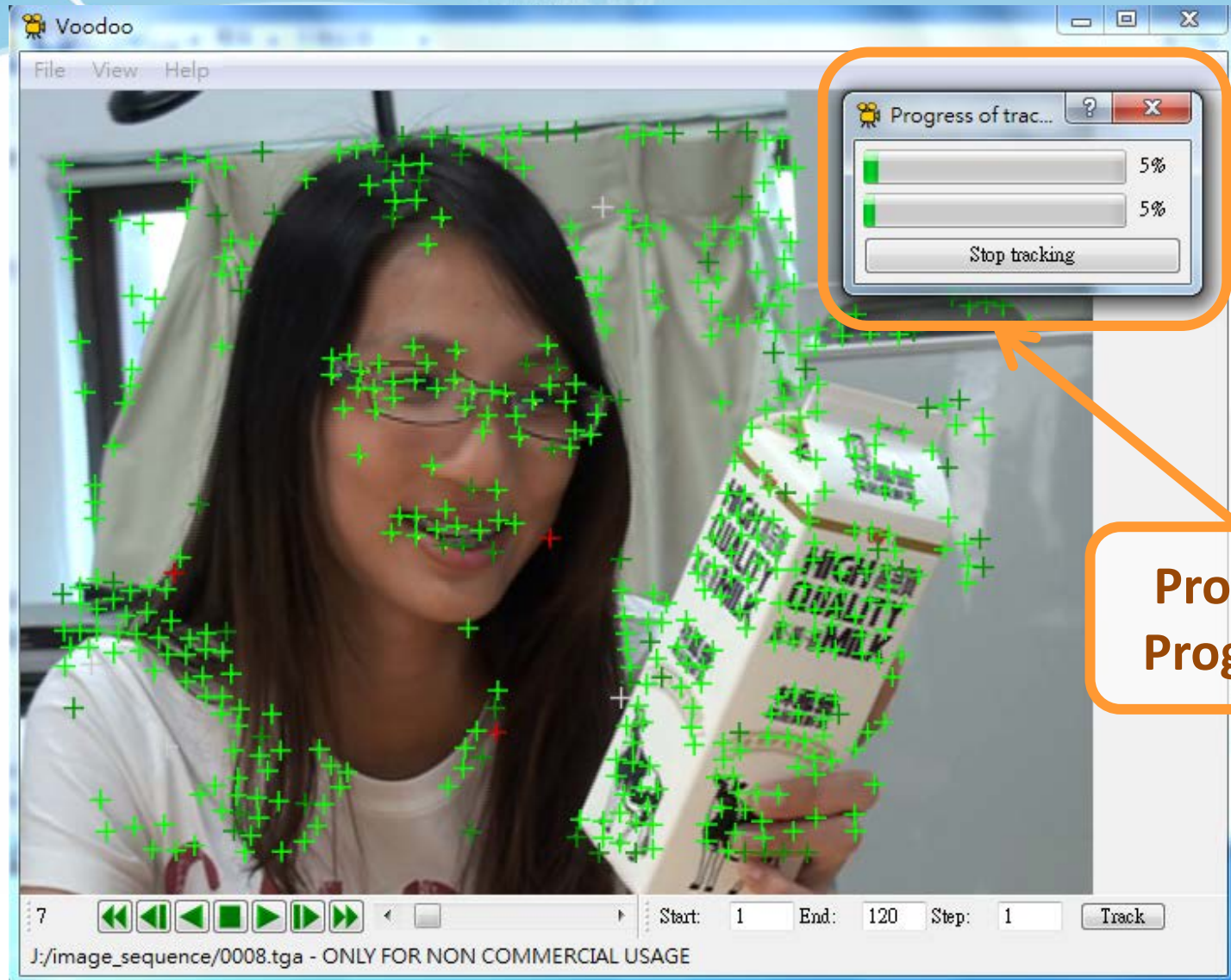
# Calibration : Track



Track

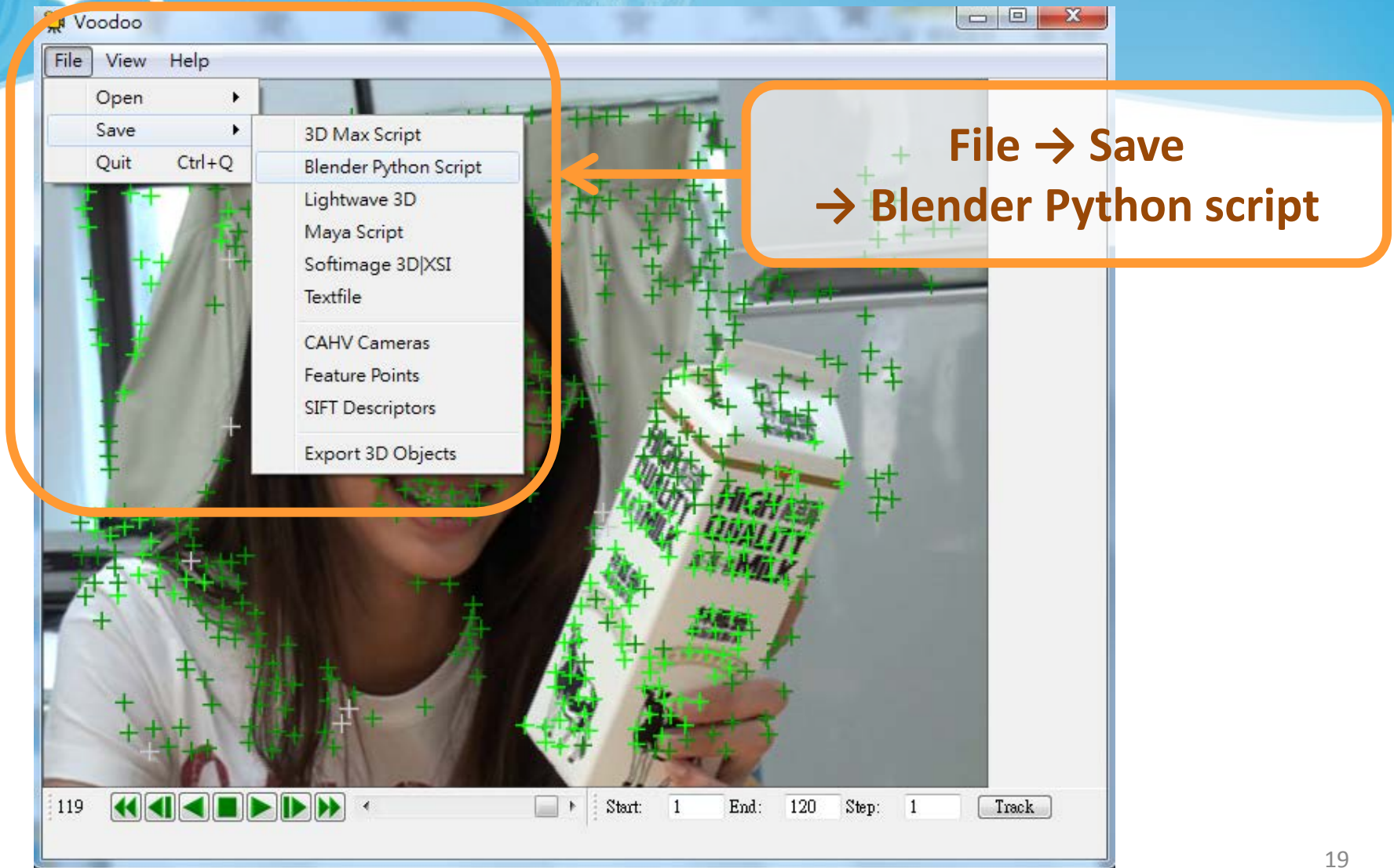


# Calibration : Track

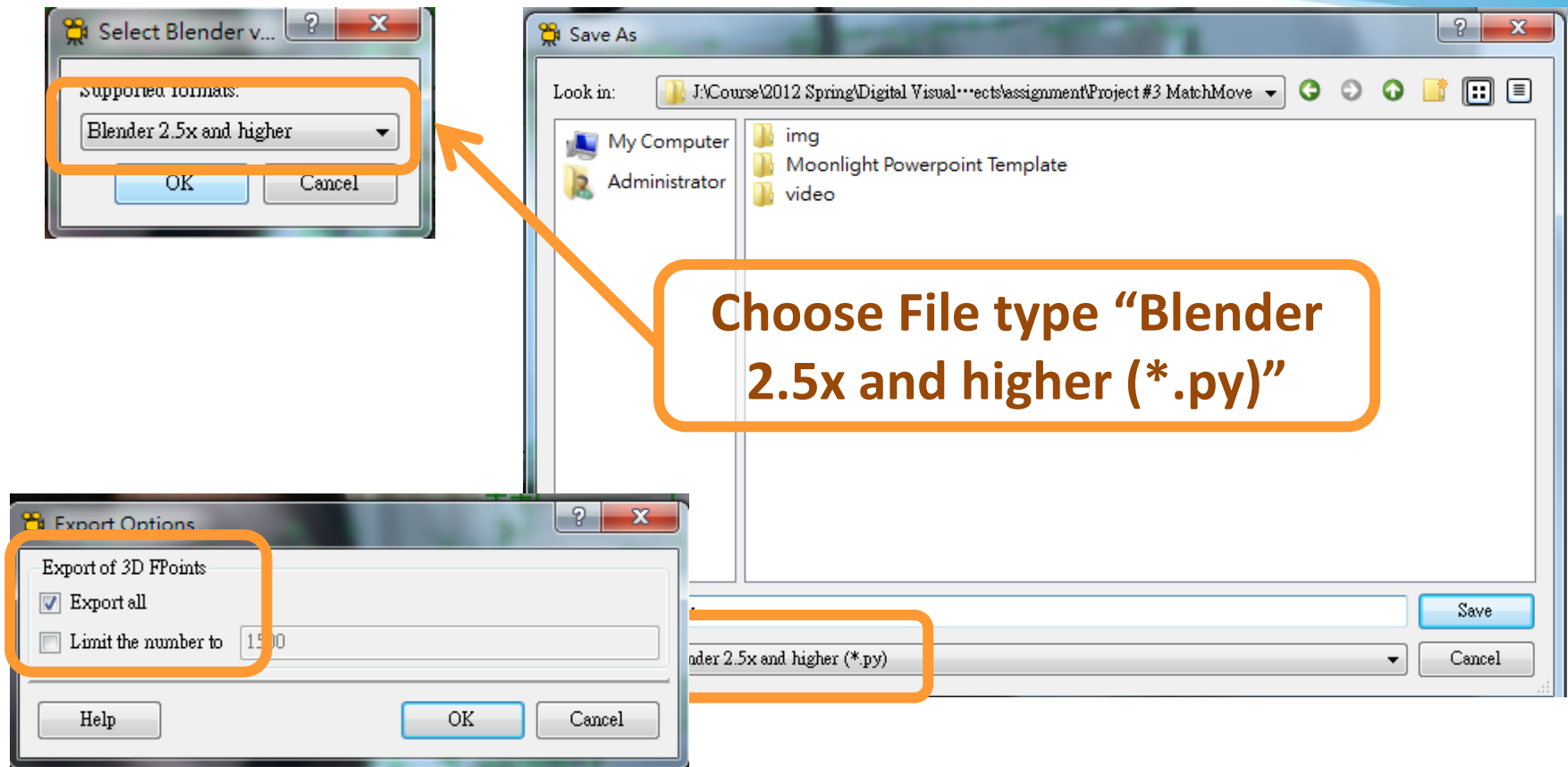




# Calibration : Export Python Script



# Calibration : Export Python Script



# Recipe: Import 3D Motions

1. Open **Blender**
2. Delete Default Objects
  - Choose the object and click **“Delete”**
3. Open Python Script
  - Change Window Type to **Text Editor**
  - Select **Text** → **Open Text Block**
  - Select the .py file exported from Voodoo
  - Click **Run Script**

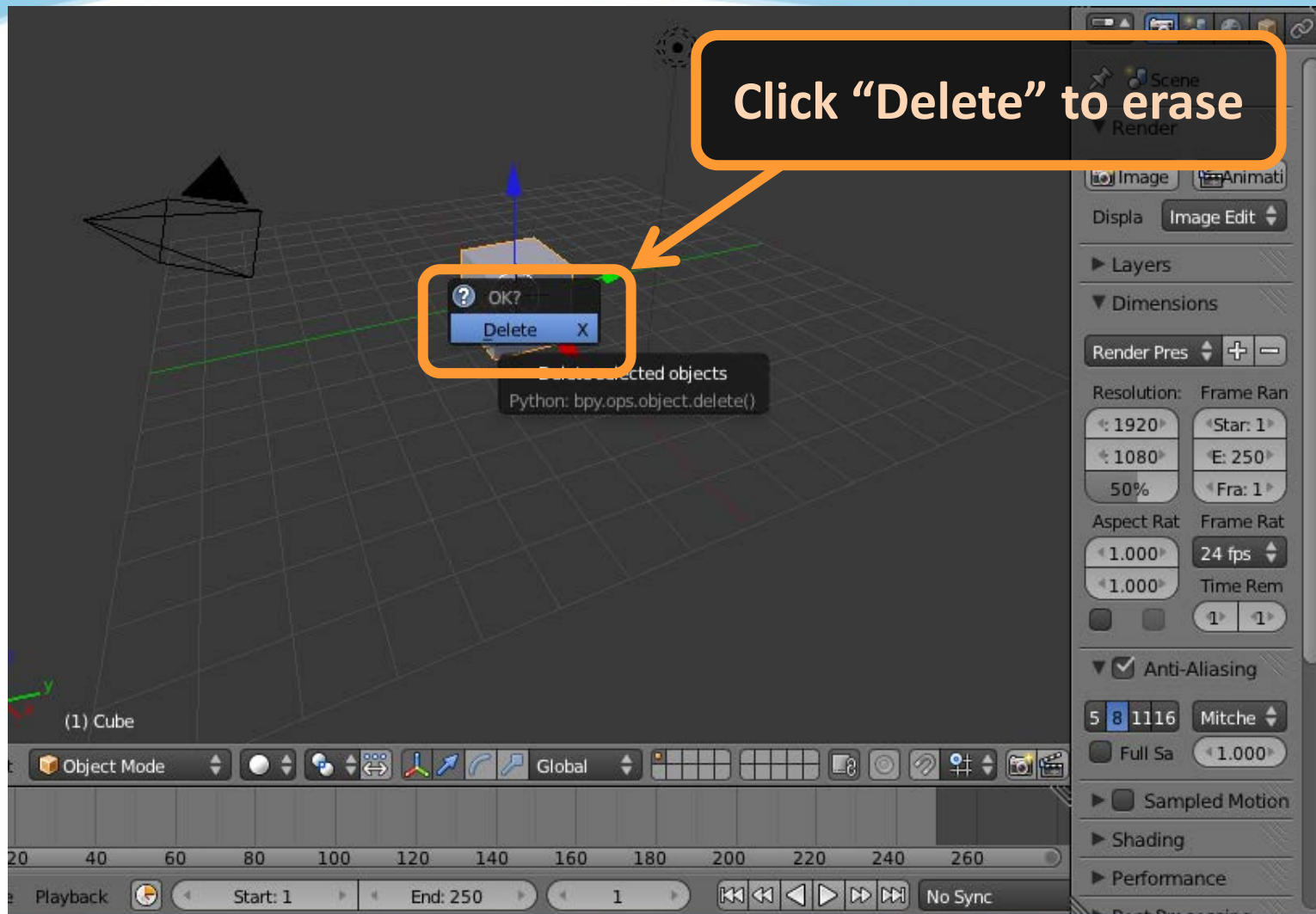
# Recipe: Import 3D Motions

## 4. Load Background Images:

- Change Window Type to **3D View**
- Select **View** → **Cameras** → **Set Active Object as Active Camera**
- Load background images
- Set the video parameters of background images
- Change the view
  - **View** → **View Persp/Ortho**
  - **View** → **Front**
- Check any frame and adjust the opacity of background images

## 5. Load models & editing their motions in the video!

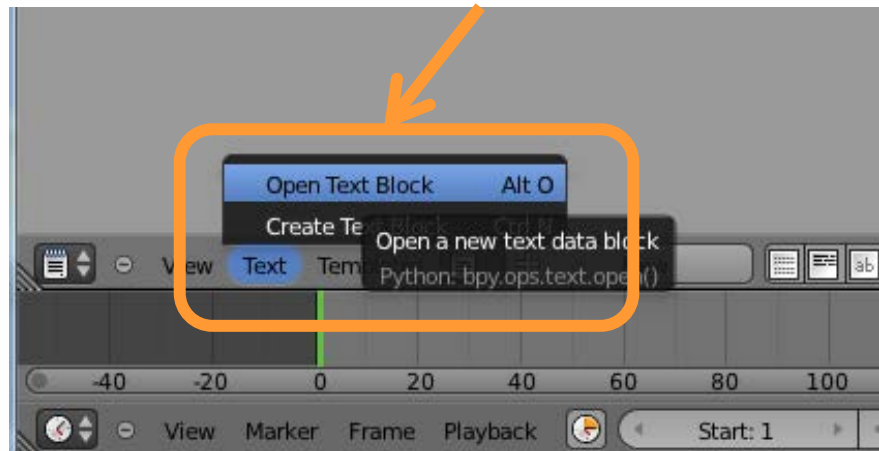
# Import 3D Motions : Delete Default Objects



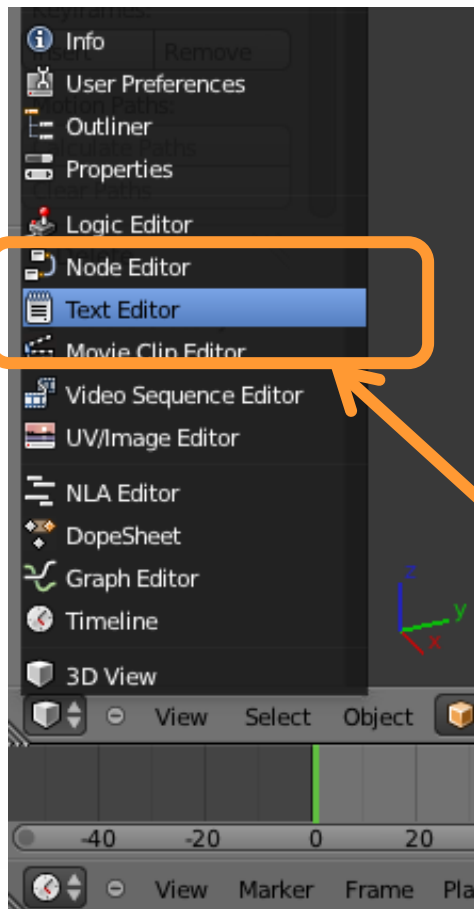


# Import 3D Motions : Open Python Script

Text → Open Text Block



Choose "Text Editor"



# Import 3D Motions : Open Python Script

```
dummy = bpy.data.objects.new('voodoo_scene', None)
dummy.location = (0.0, 0.0, 0.0)
dummy.rotation_euler = (-3.141593/2, 0.0, 0.0)
dummy.scale = (0.2, 0.2, 0.2)
scene.objects.link(dummy)
data = bpy.data.cameras.new('voodoo_render_cam')
data.lens_unit = 'DEGREES'
vcam = bpy.data.objects.new('voodoo_render_cam', data)
vcam.location = (0.0, 0.0, 0.0)
vcam.rotation_euler = (0.0, 0.0, 0.0)
vcam.scale = (1.0, 1.0, 1.0)
data.lens = 35.0
data.shift_x = 0.0
data.shift_y = 0.0
data.dof_distance = 0.0
data.clip_start = 0.1
data.clip_end = 1000.0
data.draw_size = 0.5
scene.objects.link(vcam)
vcam.parent = dummy
data = bpy.data.meshes.new('voodoo_FP3D_cloud')
mesh = bpy.data.objects.new('voodoo_FP3D_cloud', data)
mesh.location = (0.0, 0.0, 0.0)
mesh.rotation_euler = (0.0, 0.0, 0.0)
mesh.scale = (1.0, 1.0, 1.0)
scene.objects.link(mesh)
mesh.parent = dummy

#Camera Parameters
scene.frame_current = 1
vcam.data.lens = 53.811222
vcam.matrix_world = ([[0.999957,0.002491,0.008880,0.000000], [0.002421,-0.999967,0.007910,0.000000], [0.0089
vcam.keyframe_insert('location')
vcam.keyframe_insert('scale')
```

**Run Script**

**Back to "3D view"**

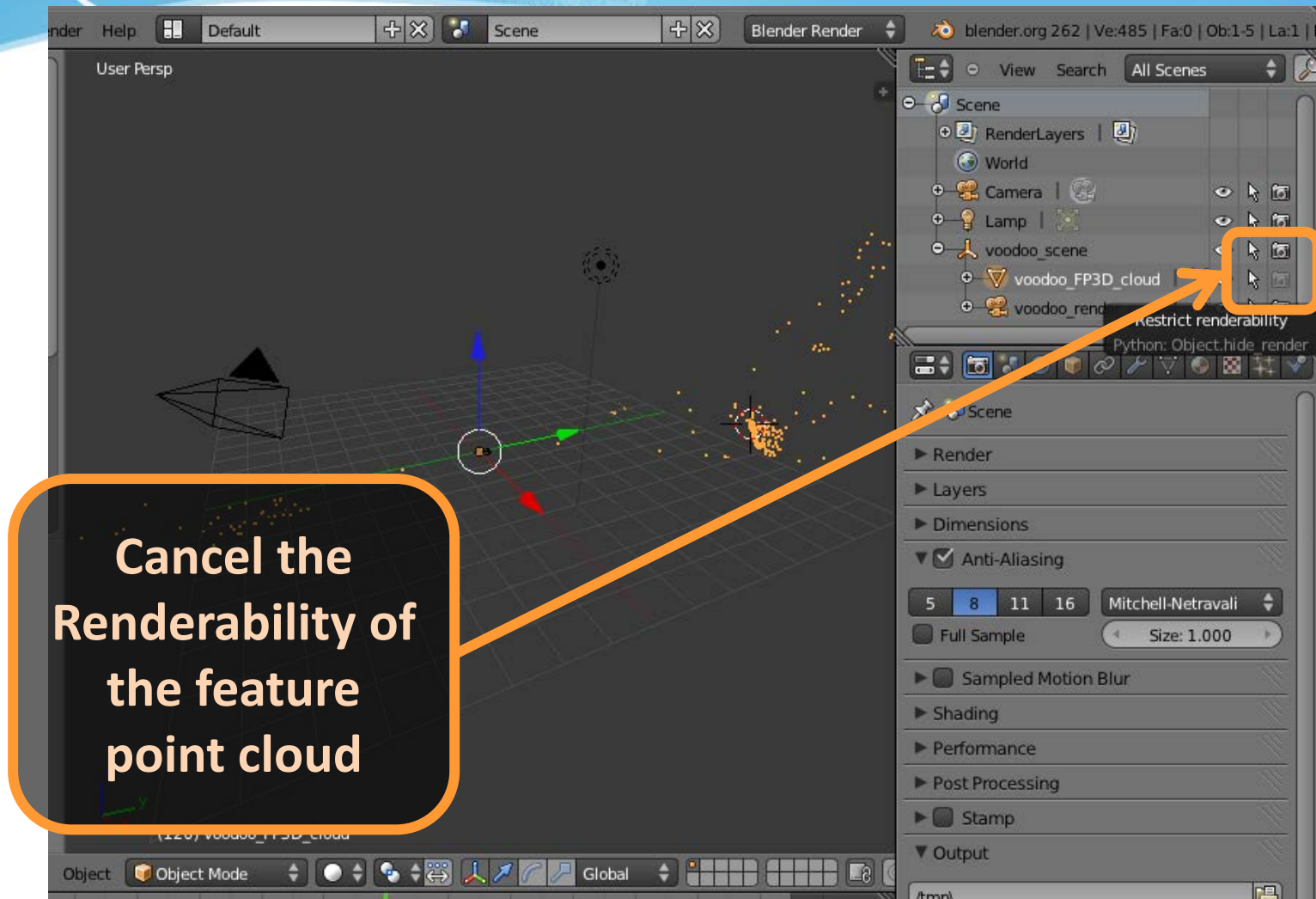
Run Script  
Shortcut: Alt P  
Python: bpy.ops.text.run\_script()

# Import 3D Motions : Adjust Rendering



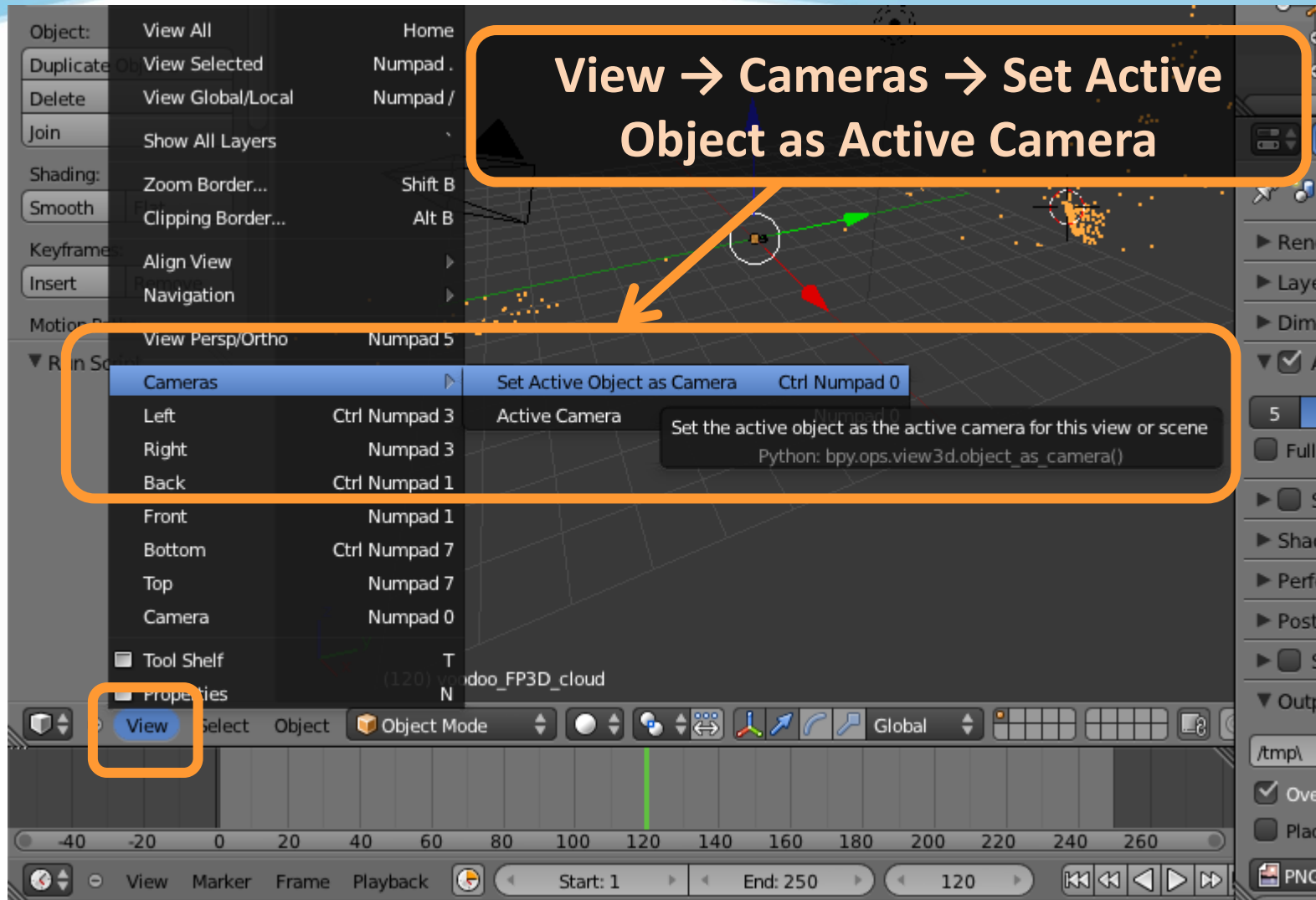
To avoid rendering the feature point cloud in your result

# Import 3D Motions : Adjust Rendering





# Import 3D Motions : Load Background Images



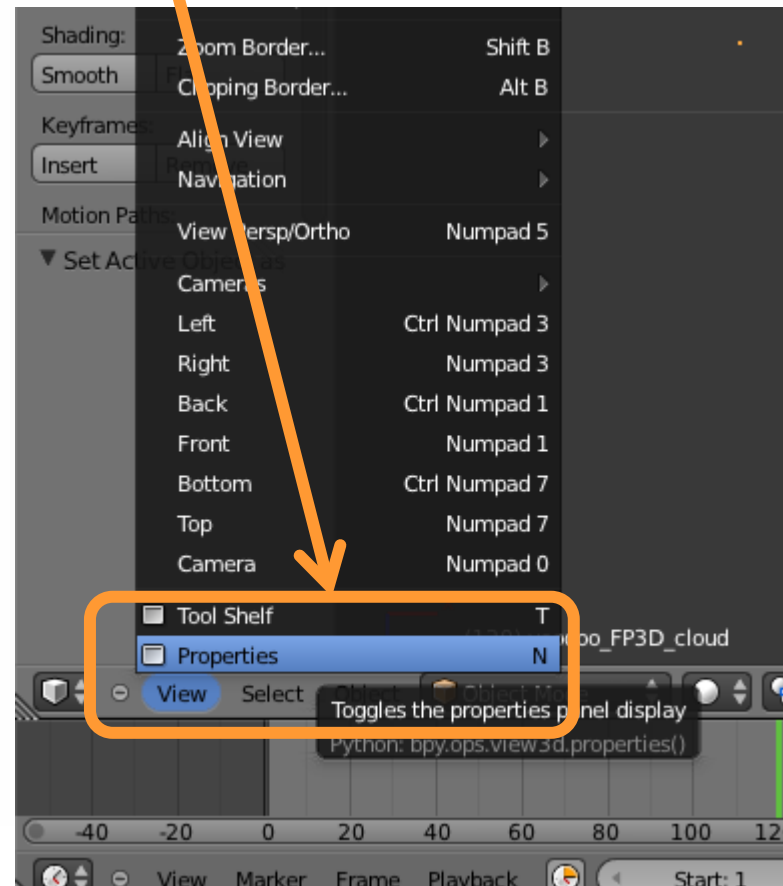
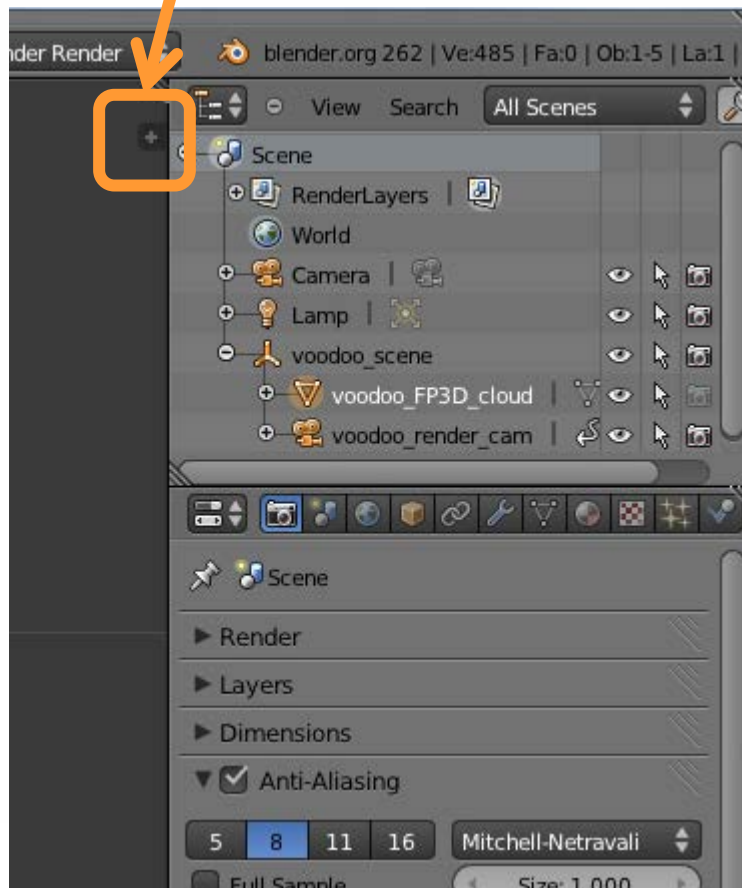


# Import 3D Motions : Load Background Images

Click the “+”

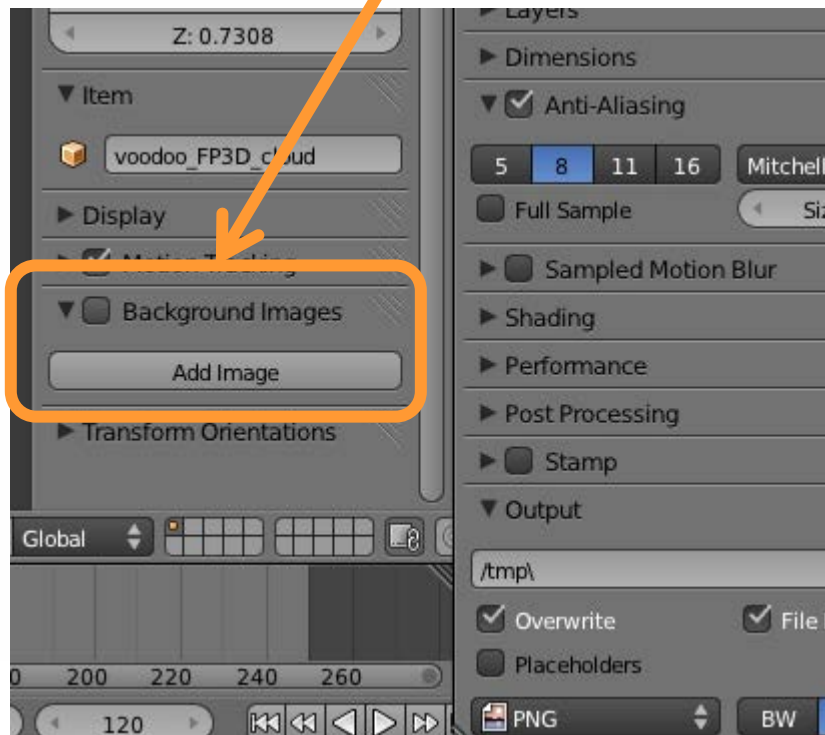
or

View → Properties

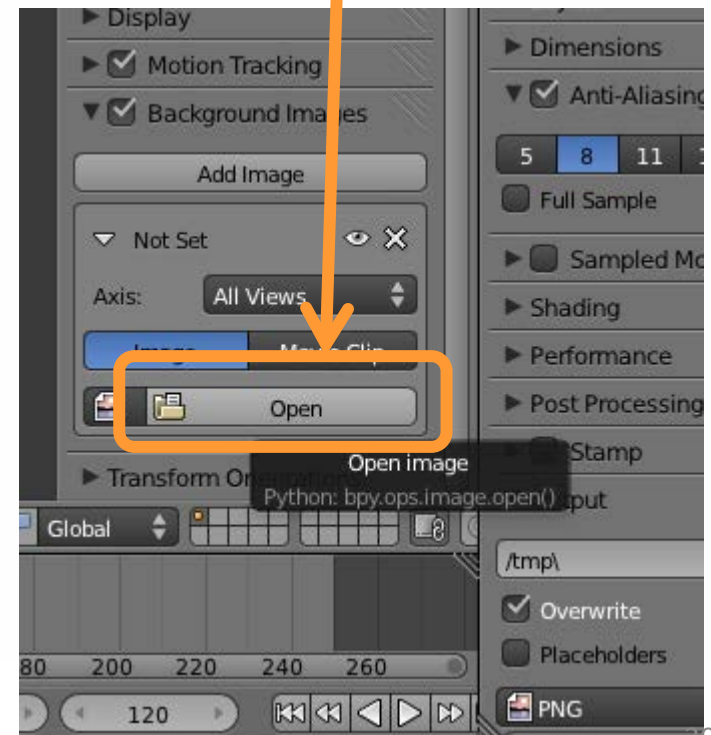


# Import 3D Motions : Load Background Images

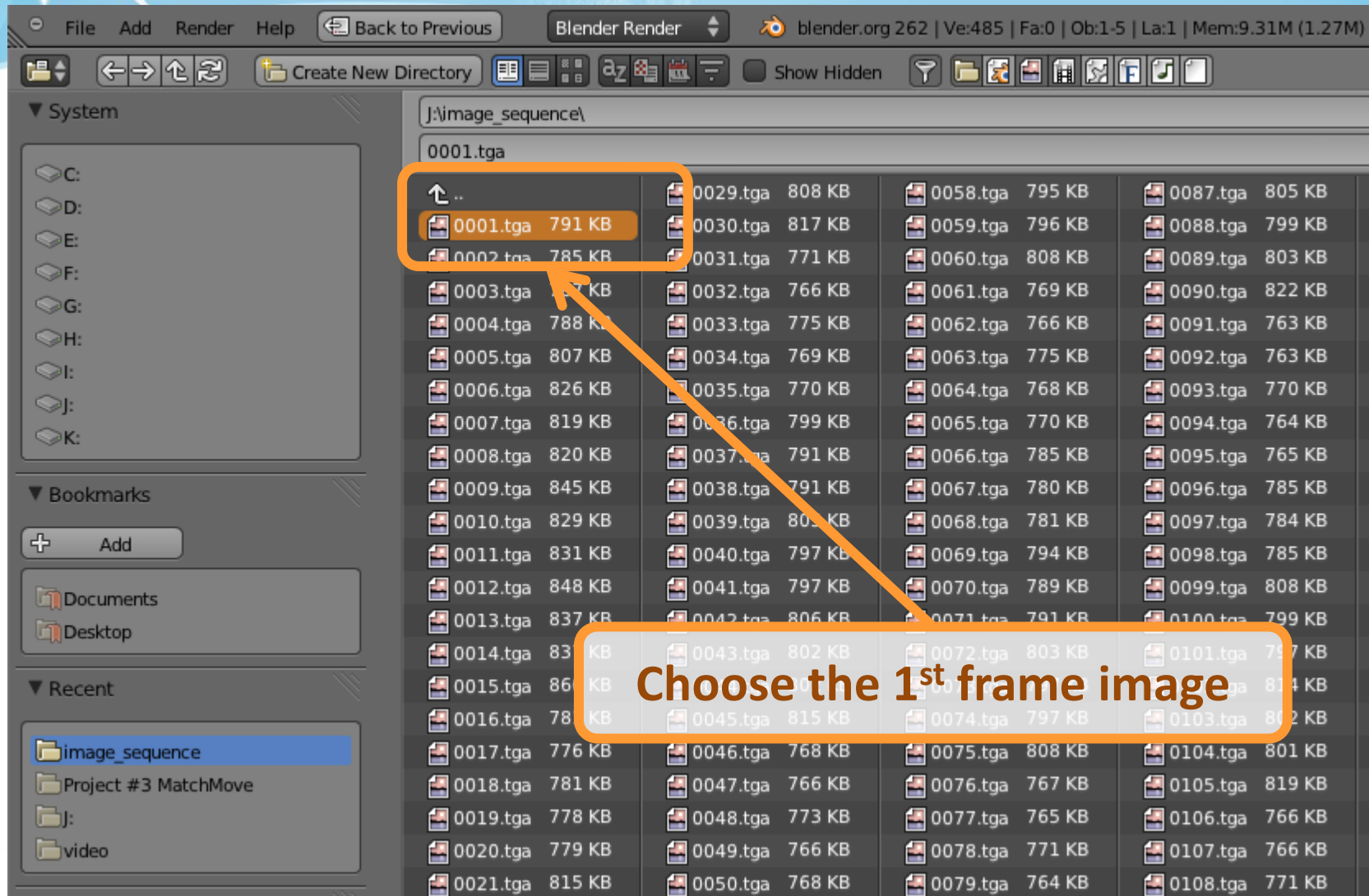
Tick off “Background Images” & click “Add Image” on the menu



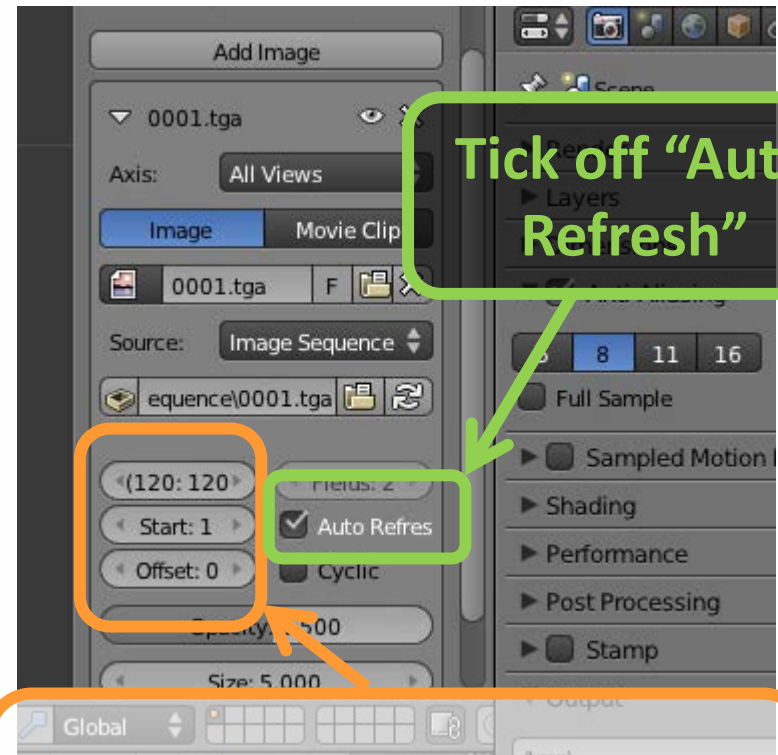
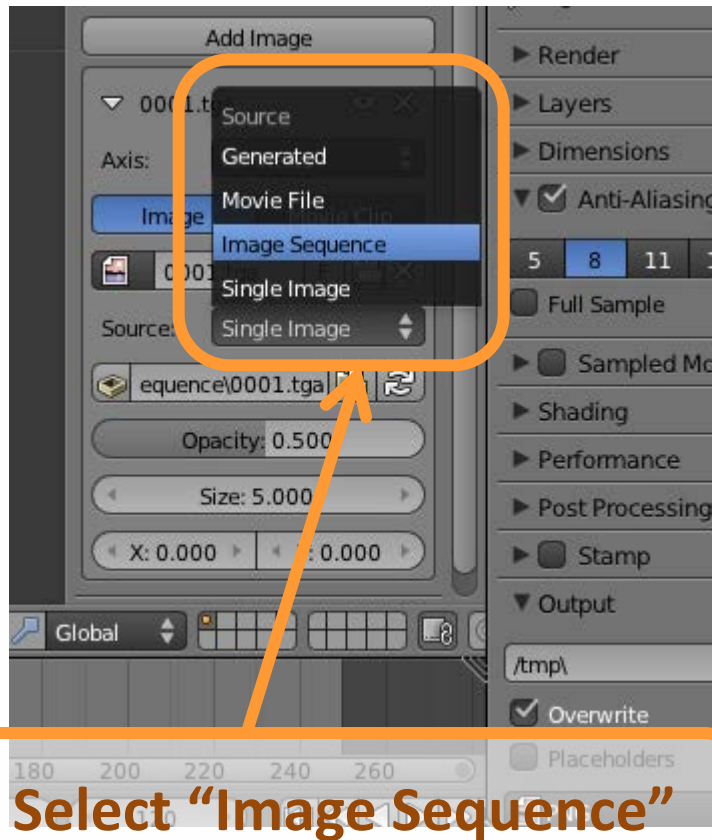
Click “Open”



# Import 3D Motions : Load Background Images

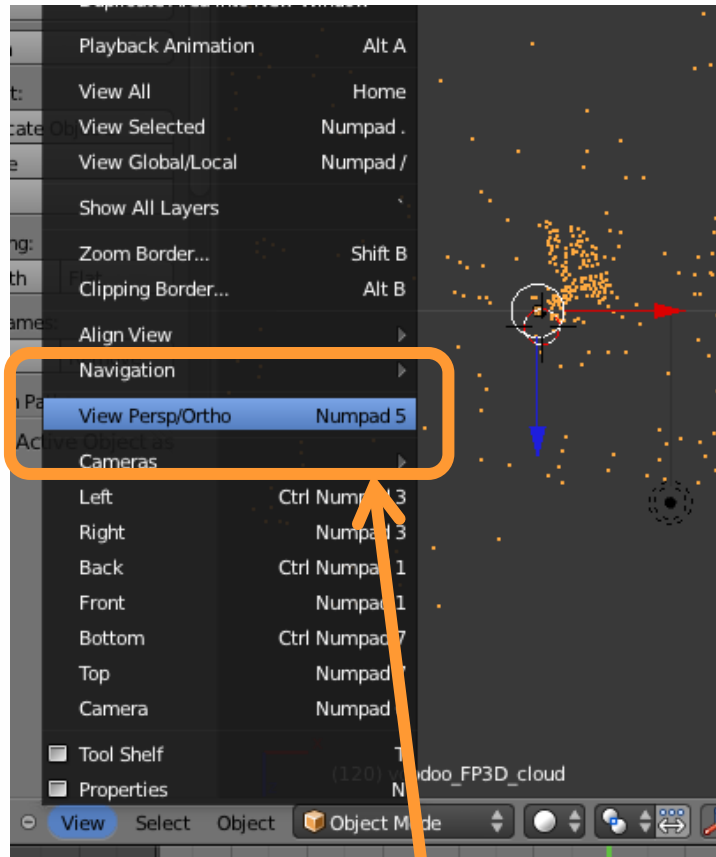


# Import 3D Motions : Load Background Images

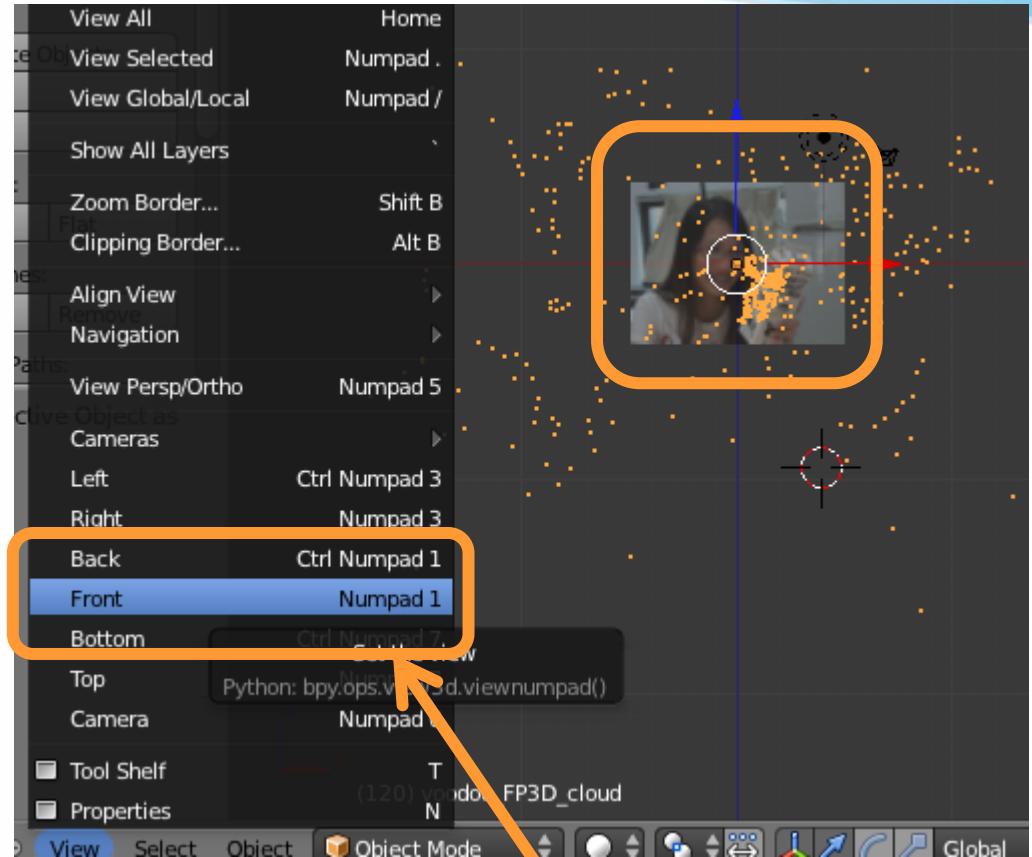




# Import 3D Motions : Load Background Images



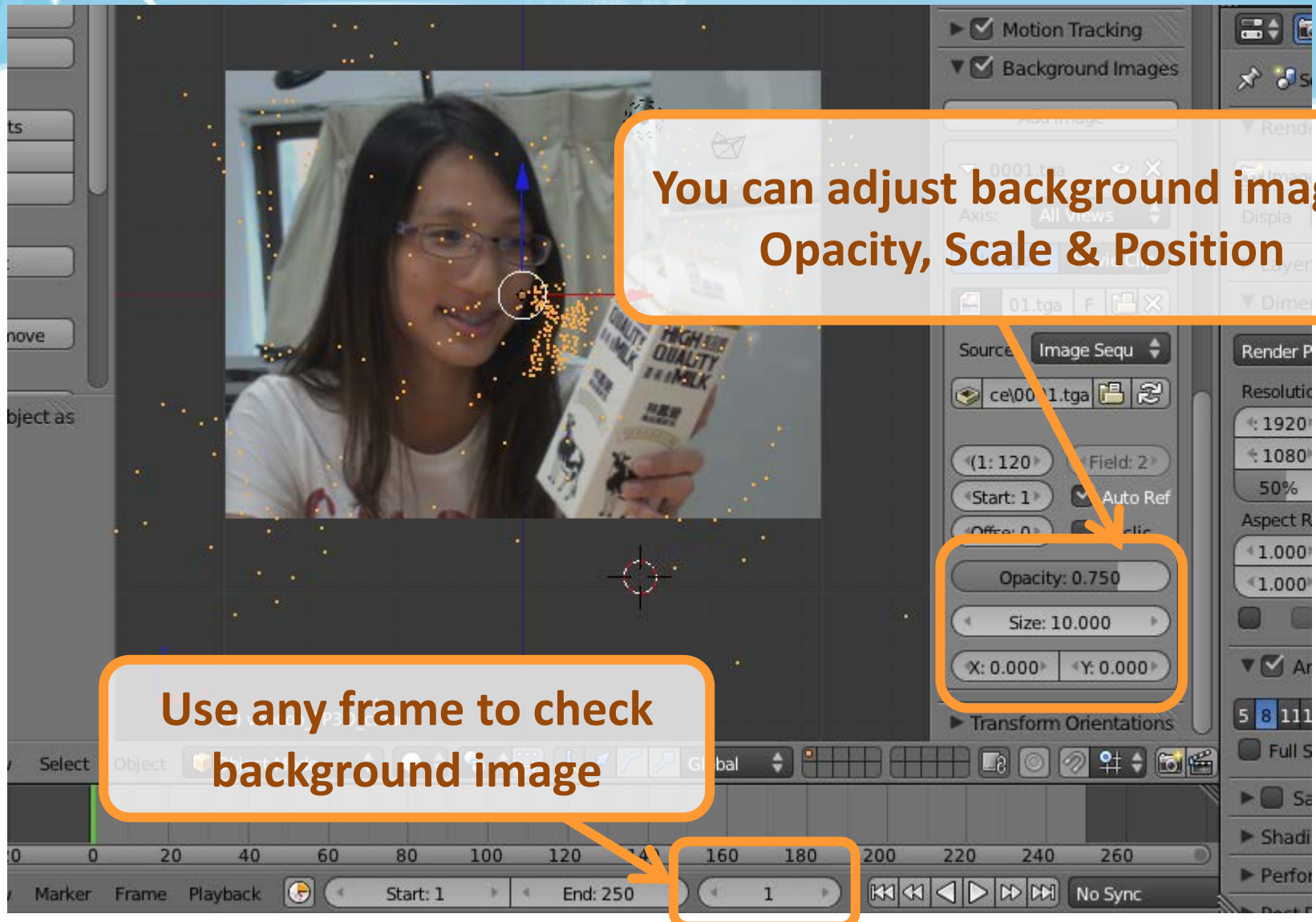
**View → View Persp/Ortho**



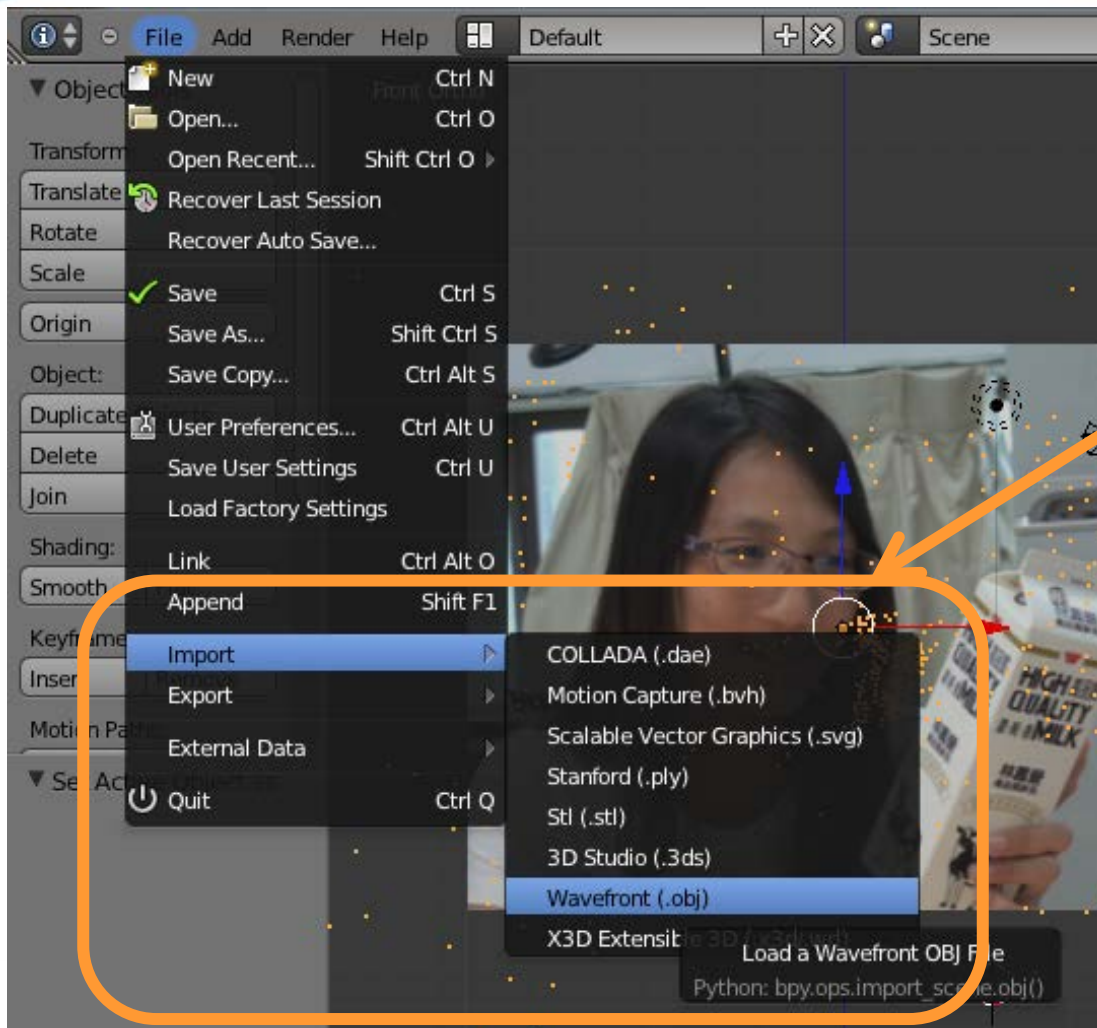
**View → Front**



# Import 3D Motions : Load Background Images



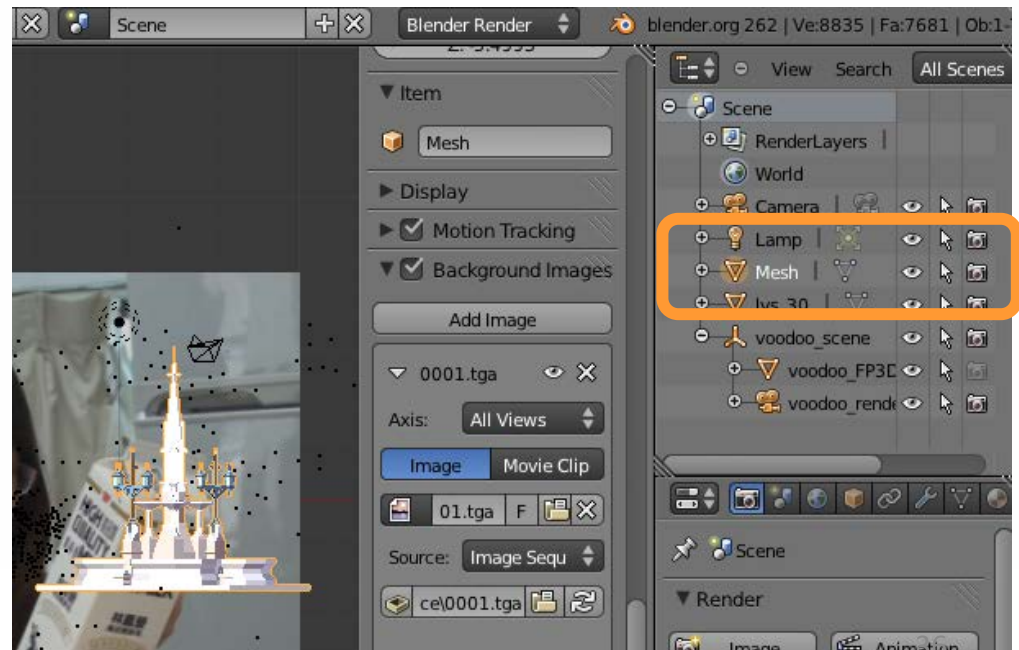
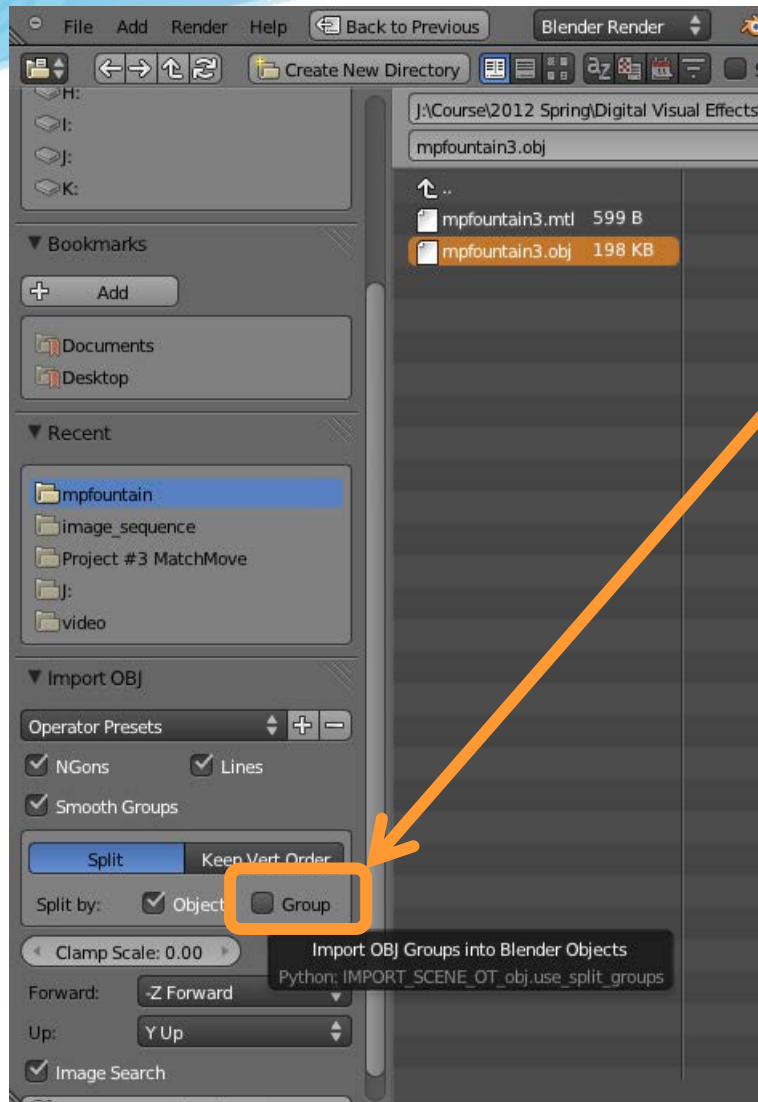
# Import 3D Motions : Load Models



File → Import  
→ “Model Type”

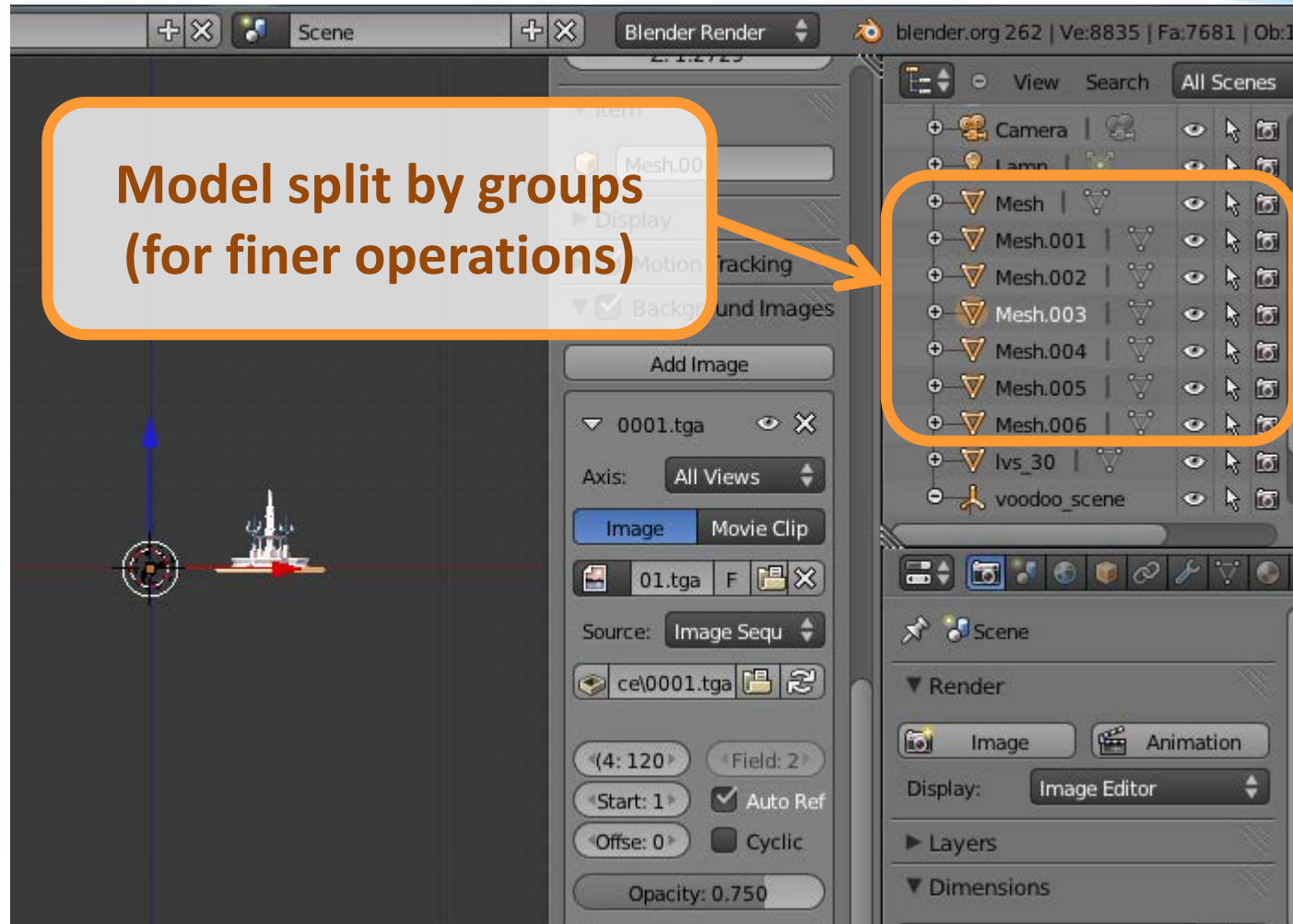
# Import 3D Motions : Load Models

To use the model as a “single object” instead of many “small groups(components)”, you can close the group options

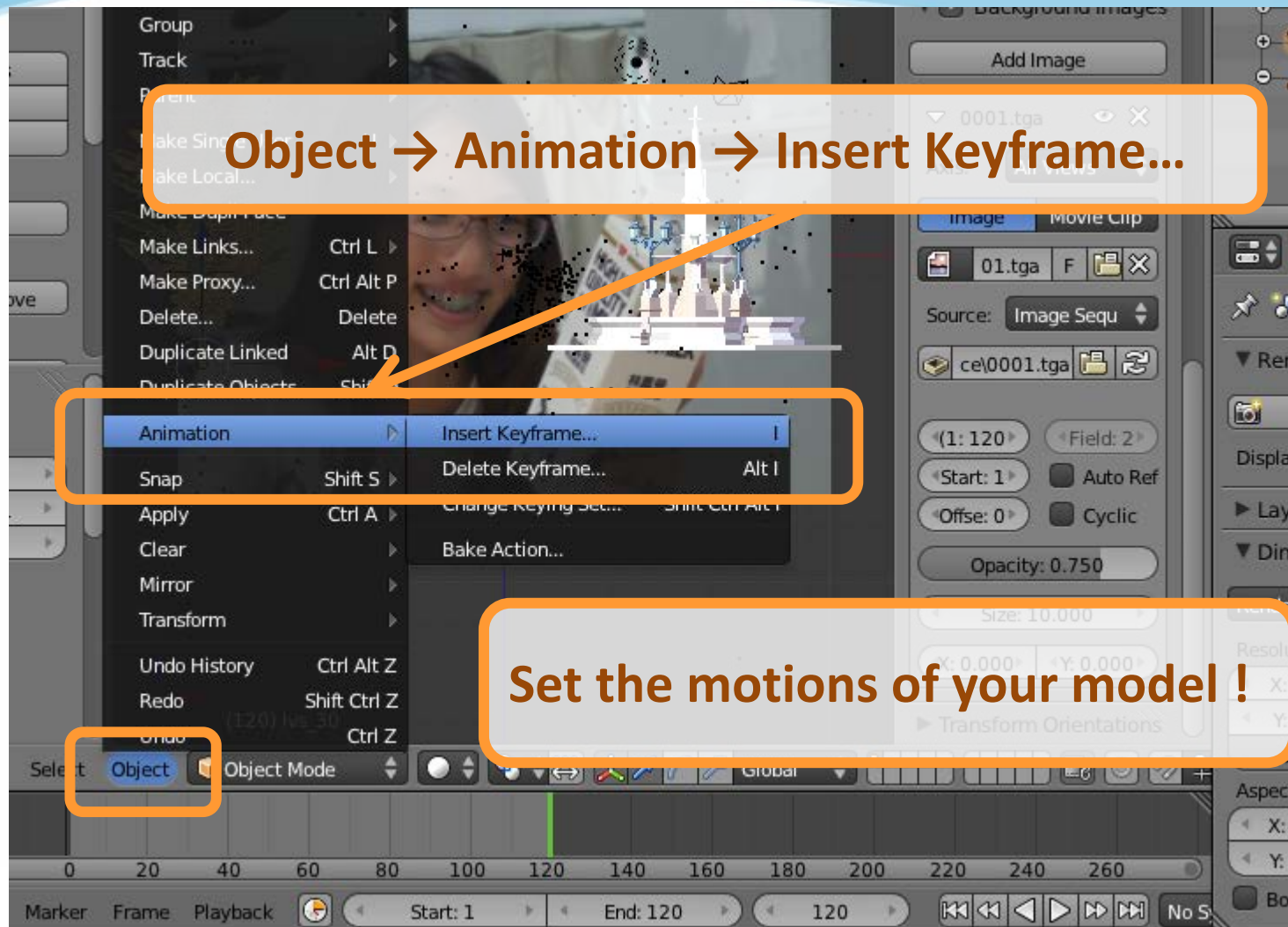




# Import 3D Motions : Load Models



# Import 3D Motions : Set Keyframes





# Import 3D Motions : Set Keyframes

The image shows the Blender 2.79 interface with several annotations in orange boxes and arrows pointing to specific UI elements:

- Lock the parameters in keyframe**: Points to the 'Lock' icon (a padlock) in the top right of the Properties panel.
- Model parameters and corresponding lock in keyframe**: Points to the 'Rotation' parameter in the 'Transform' panel, which is highlighted with a blue background.
- Choose Object Mode**: Points to the 'Object Mode' button in the bottom left of the interface.
- Choose keyframe**: Points to the '30' frame number in the timeline.

The 'Transform' panel shows the following values:

Location:	Rotation:	Scale:
<-5.71>	<0°>	<3.096>
<0.001>	<-3.37>	<3.096>
<-2.53>	<-0°>	<3.096>

The 'Rotation M' dropdown is set to 'XYZ Euler'.

The timeline at the bottom shows a frame range from 0 to 120, with a playhead at frame 30.

# Import 3D Motions : Set Keyframes

The screenshot displays a 3D software interface. In the center, a 3D view shows a character model with a yellow motion path overlaid. An orange box highlights this path, with an arrow pointing to a label. To the right, a properties panel is visible, featuring a 'Motion Paths' section with various settings. An orange box highlights this section, with an arrow pointing to another label. At the bottom, a timeline shows keyframes as vertical green lines. An orange box highlights a portion of this timeline, with an arrow pointing to a third label. The interface also includes a top menu bar, a left sidebar, and a bottom status bar.

**You can use  
Object → Motion Paths → Calculate Paths  
to see the motion path of models**

**Motion Path**

**Time point of Keyframes**

**Motion Paths**

Around Frame | In Range

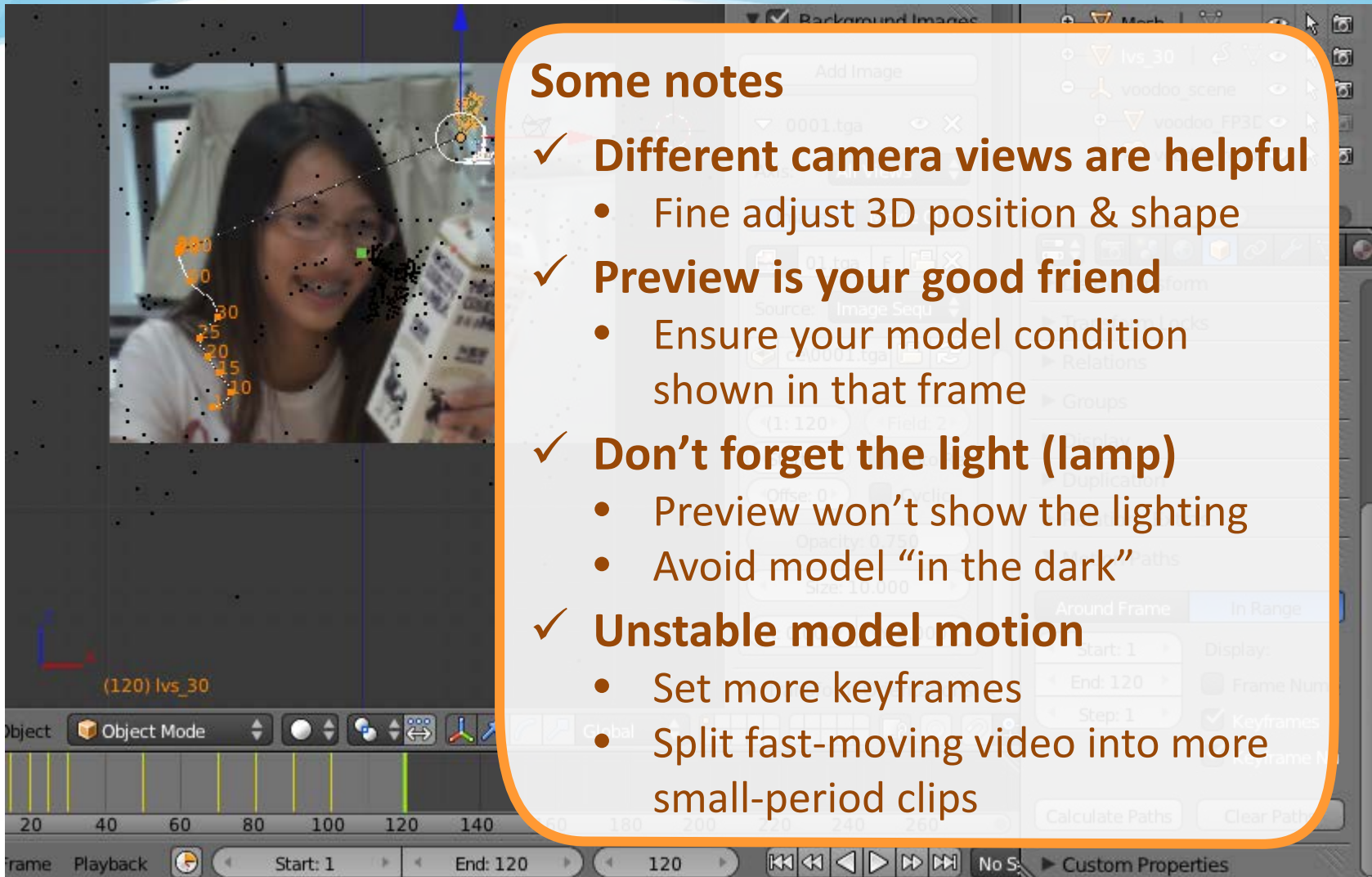
Start: 1 | End: 120 | Step: 1

Display:

- ☐ Frame Num
- ☒ Keyframes
- ☒ Keyframe Nu

Calculate Paths | Clear Paths

# Import 3D Motions : Set Keyframes



**Some notes**

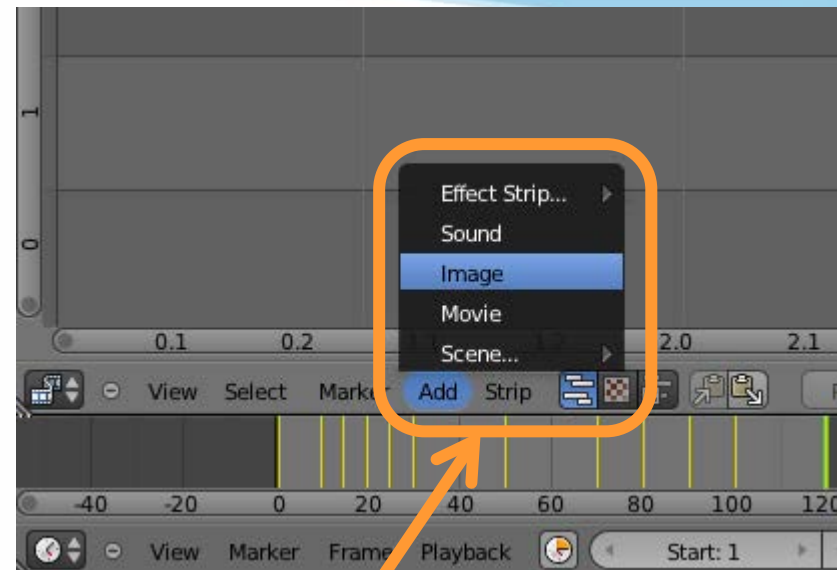
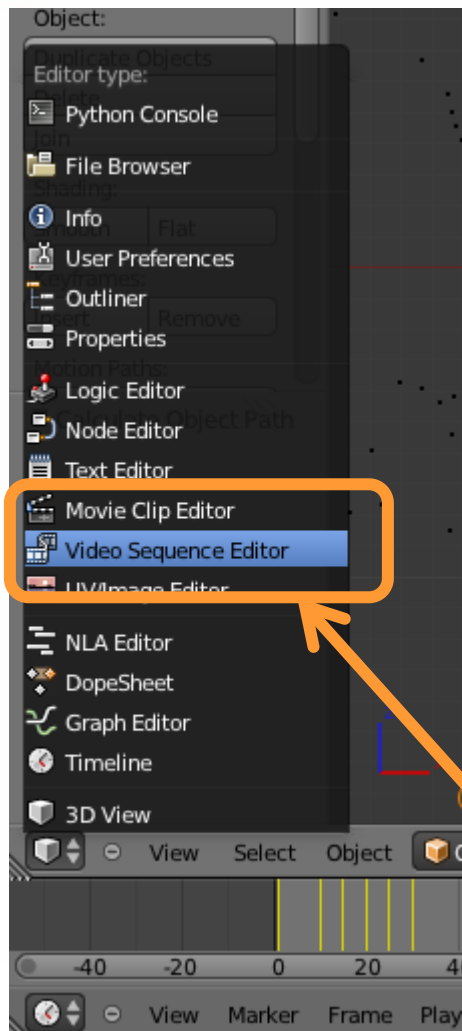
- ✓ **Different camera views are helpful**
  - Fine adjust 3D position & shape
- ✓ **Preview is your good friend**
  - Ensure your model condition shown in that frame
- ✓ **Don't forget the light (lamp)**
  - Preview won't show the lighting
  - Avoid model "in the dark"
- ✓ **Unstable model motion**
  - Set more keyframes
  - Split fast-moving video into more small-period clips



# Recipe: Compositing

1. Add Image Sequence
  - Change Window Type to **Video Scene Editor**
  - Select **Add → Images** and select all images
  - Drag the strip to the “1st Frame” in Layer 1
2. Add Scene
  - Select **Add → Scene**
  - Drag the scene strip to the “1st Frame” in Layer 2
3. Set Scene
  - Change scene property to “**Alpha Over**”
  - Set frame and video parameters
4. Click **Animation**

# Compositing: Add Image Sequence

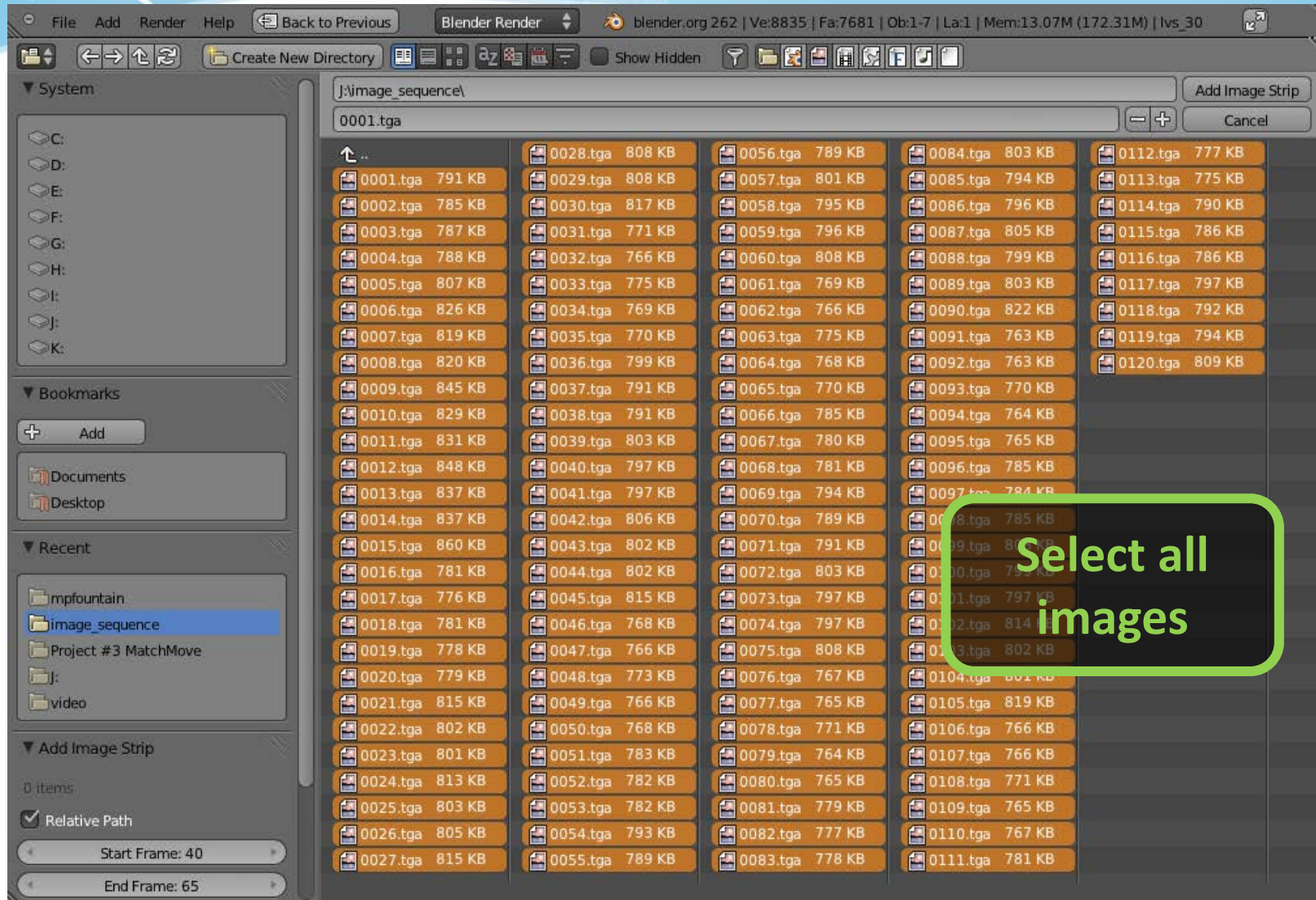


Add → Image

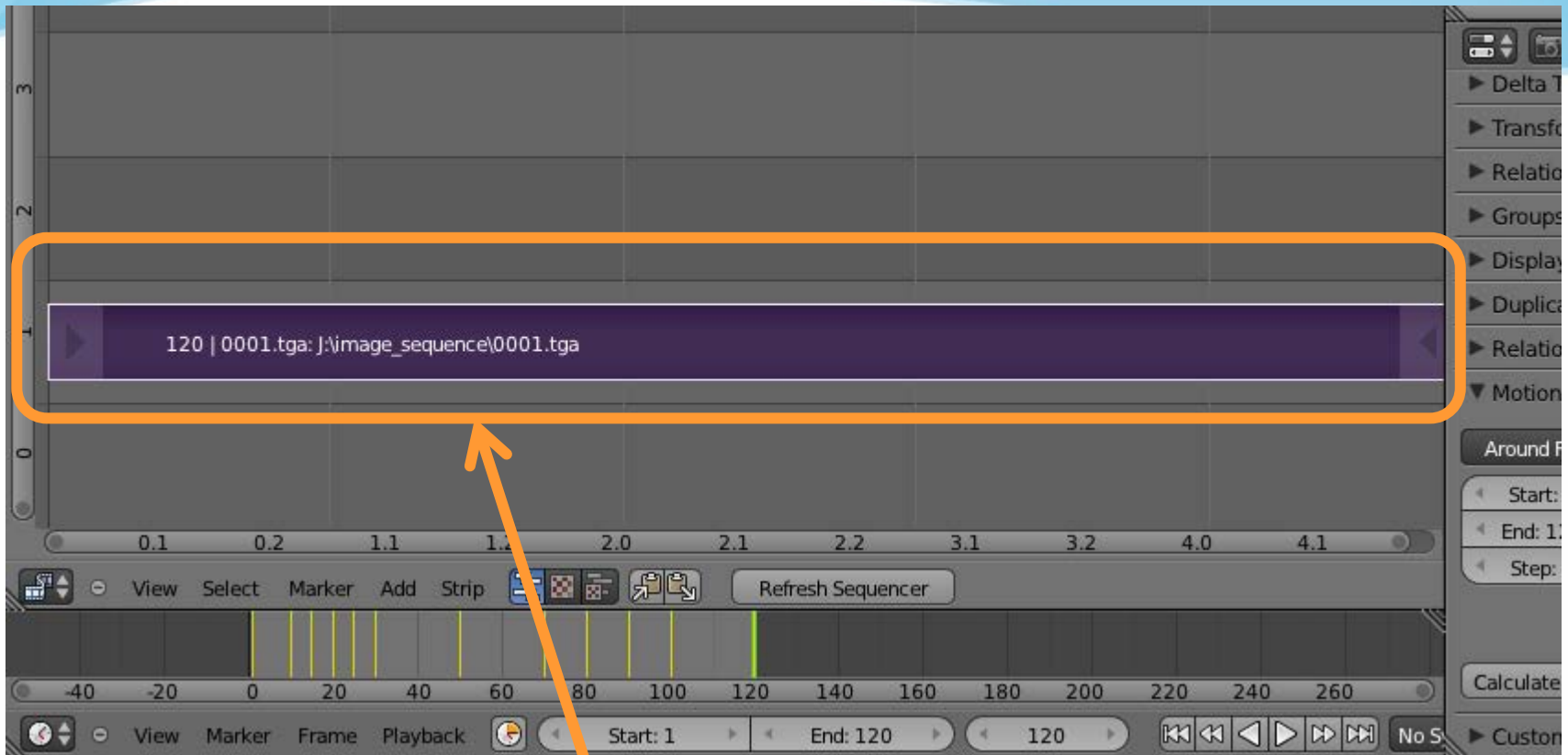
Choose "Sequence Editor"



# Compositing: Add Image Sequence



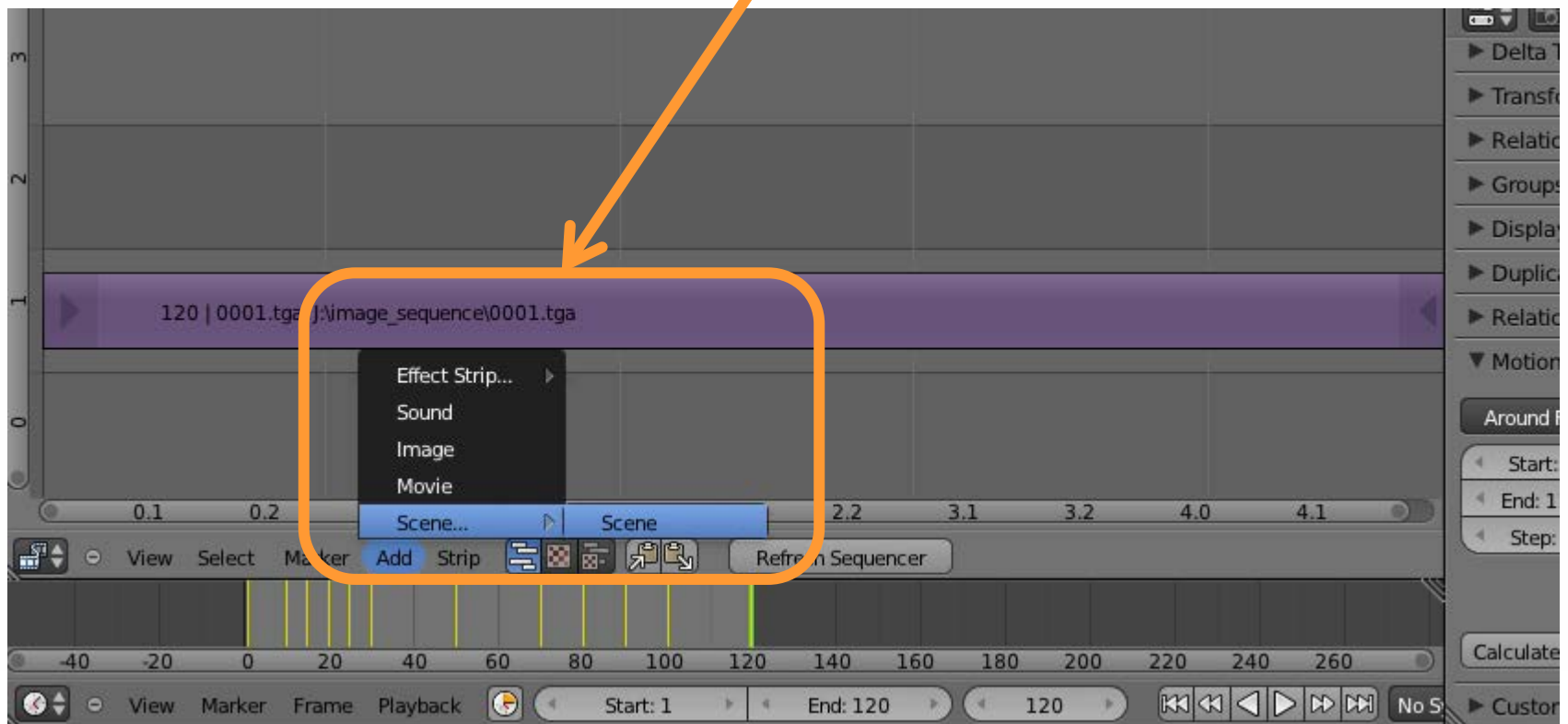
# Compositing: Add Image Sequence



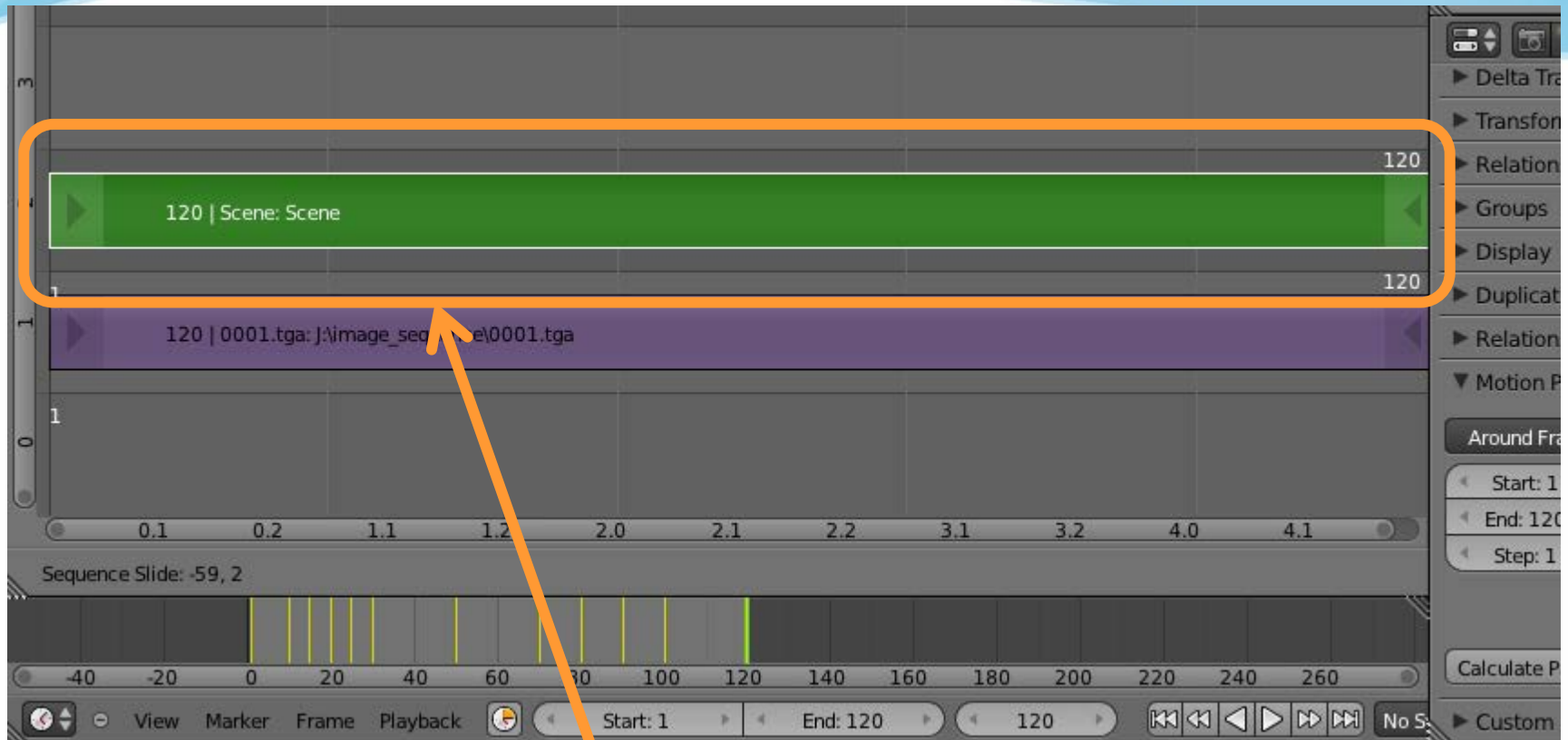
**Drag the strip to the "1<sup>st</sup> Frame" in Layer 1**

# Compositing: Add Scene

Add → Scene → Scene



# Compositing: Add Scene

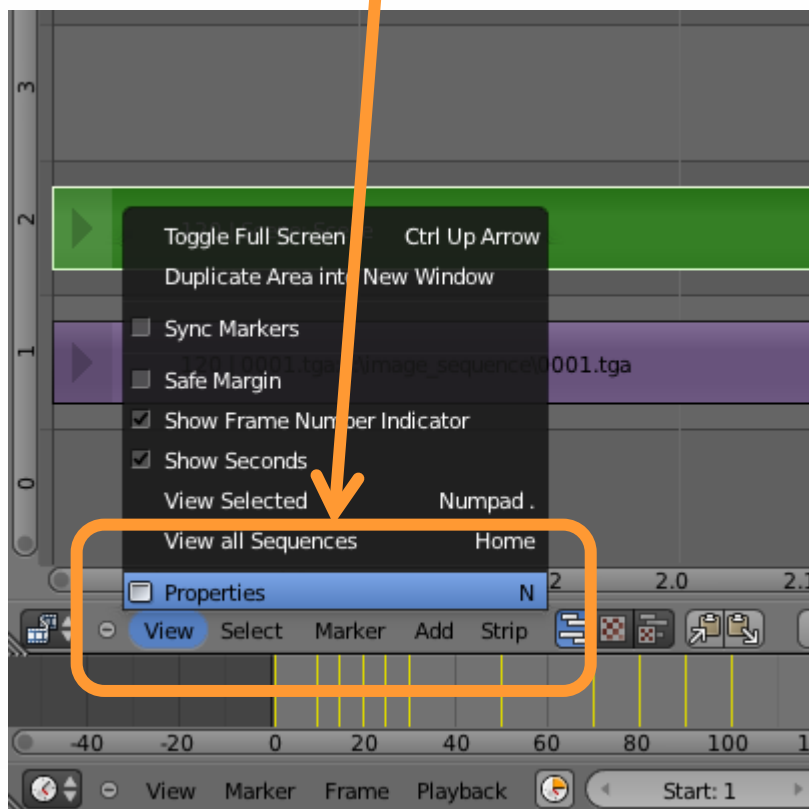


**Drag the scene strip to the “1<sup>st</sup> Frame” in Layer 2**

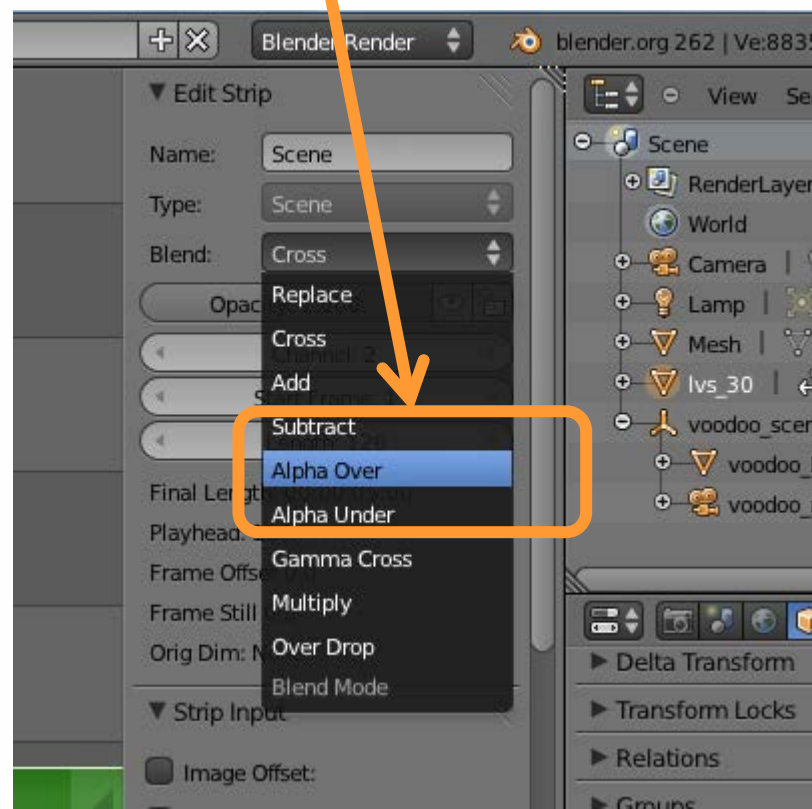


# Compositing: Set Scene

View → Properties



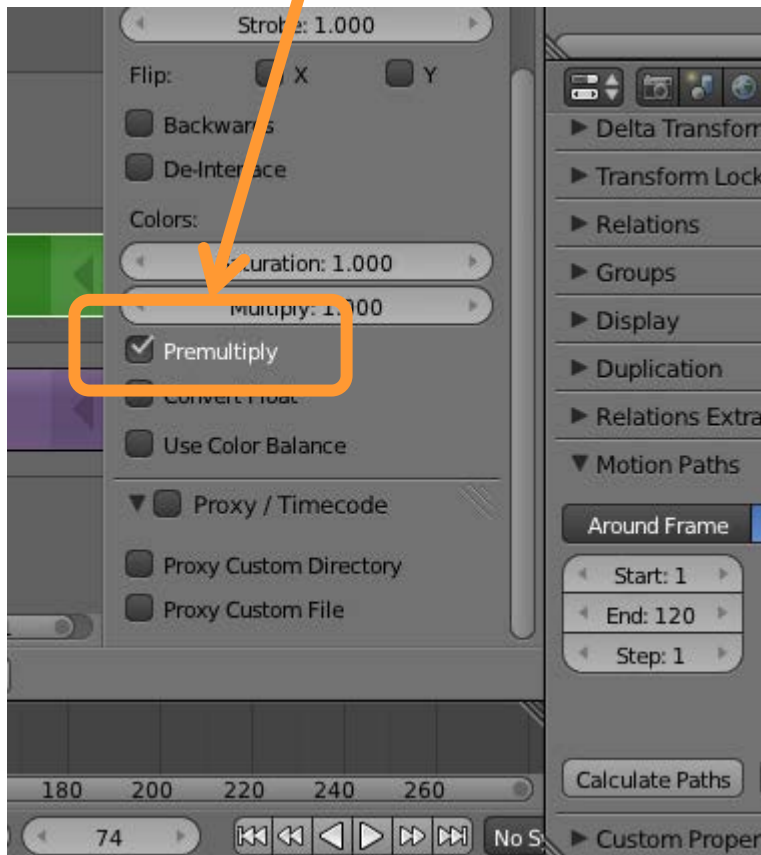
Set Blend "Alpha Over"



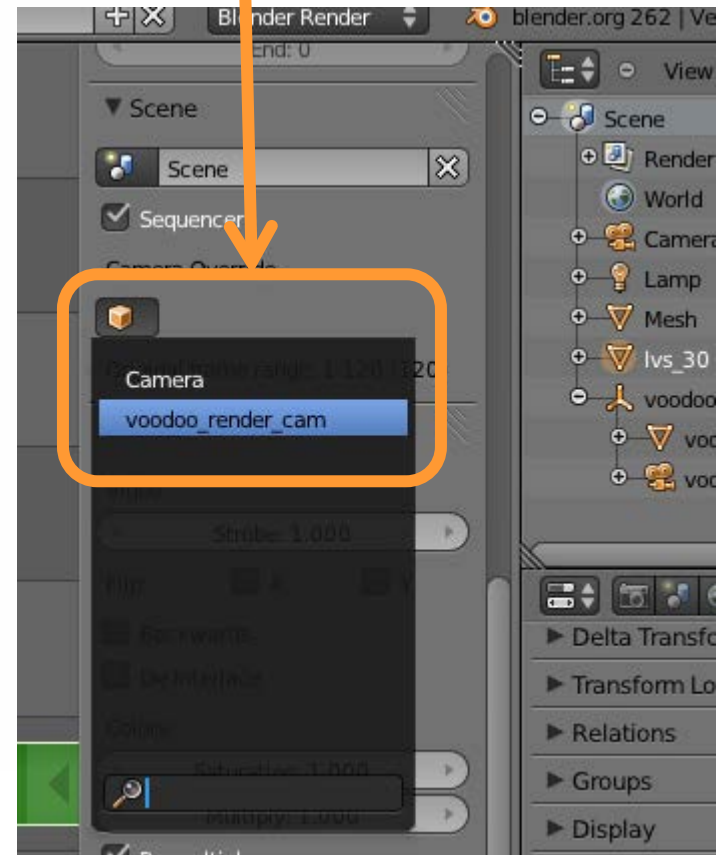


# Compositing: Set Scene

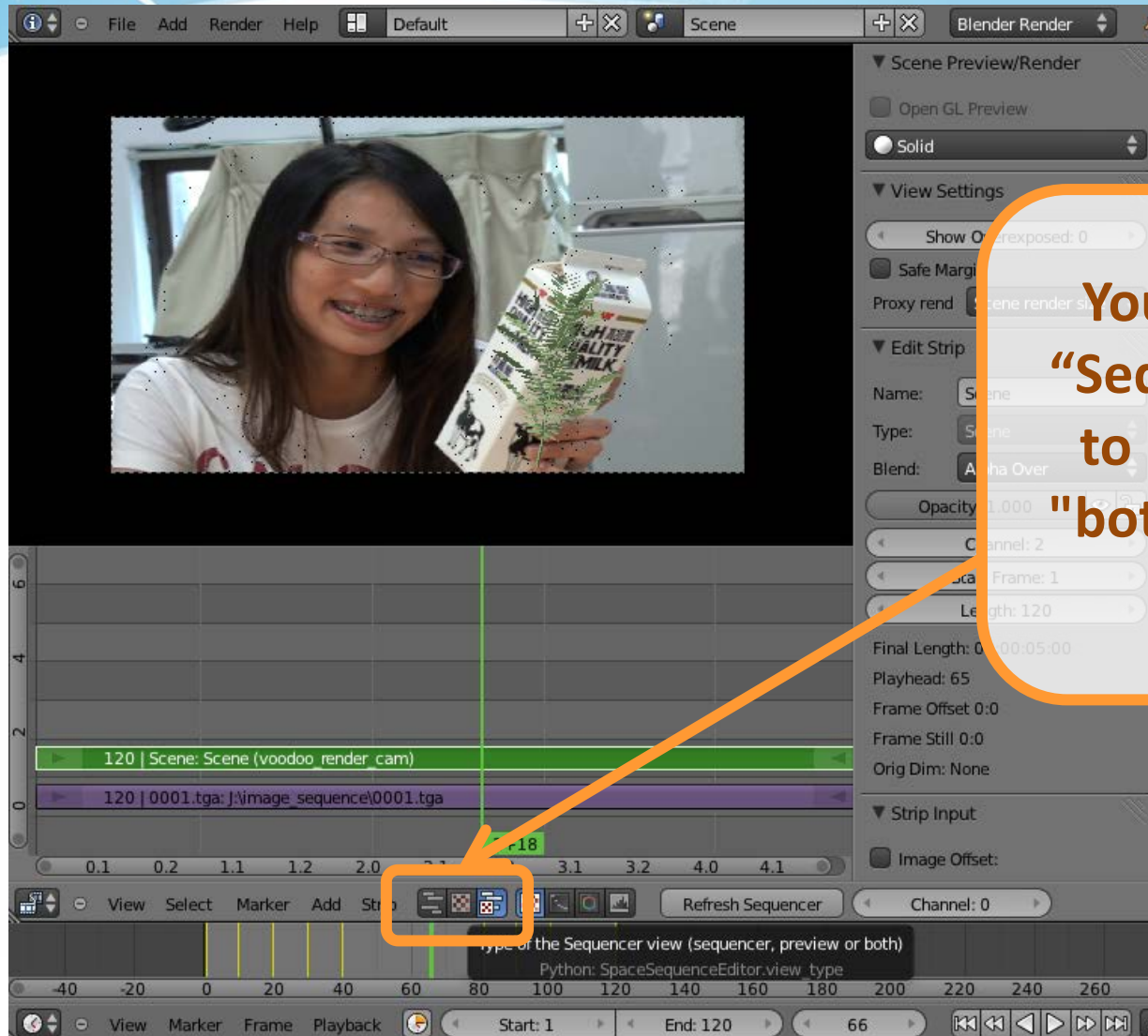
Tick off "Premultiply"



Select "Voodoo\_render\_cam"



# Compositing: Output Video



You can change  
"Sequencer view"  
to "Preview" or  
"both" to preview  
the result

# Compositing: Set Scene

The screenshot shows a video compositing software interface. On the left, a timeline with a playhead at 65. In the center, the 'Edit Strip' panel for a 'Scene' strip. On the right, a 'Scene' panel showing a hierarchy of objects and a 'Layers' panel with 'Dimensions' and 'Render Presets'.

**Annotations:**

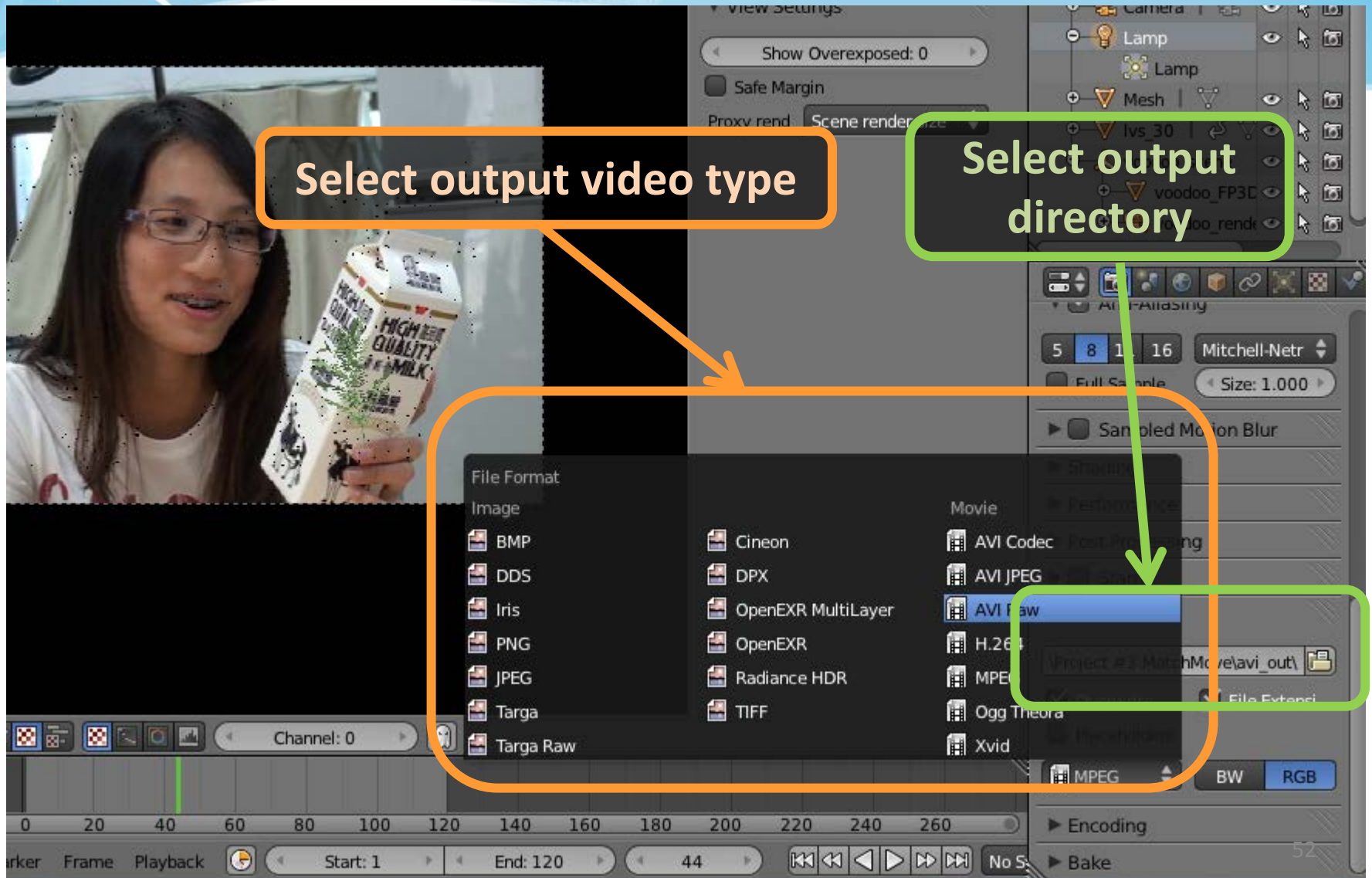
- Set "Start Frame" and "(Video) Length"**: An orange arrow points from this text box to the 'Start Frame: 1' and 'Length: 120' fields in the 'Edit Strip' panel.
- Set video Resolution, Frame Range (time) & Frame Rate**: An orange arrow points from this text box to the 'Resolution' (X: 640, Y: 480), 'Frame Range' (Start Fram: 1, End Fra: 120, Frame Ste: 1), and 'Frame Rate' (24 fps) fields in the 'Render Presets' section of the 'Layers' panel.

**Interface Details:**

- Edit Strip:** Name: Scene, Type: Scene, Blend: Alpha Over, Opacity: 1.000, Channel: 2, Start Frame: 1, Length: 120, Playhead: 65, Frame Offset: 0, Orig Dim: Non, Strip Input.
- Scene Panel:** RenderLayers, World, Camera, Lamp, Mesh, lvs\_30, voodoo\_scene, voodoo\_FP3D, voodoo\_rende.
- Layers Panel:** Dimensions, Render Presets, Resolution (X: 640, Y: 480, 100%), Aspect Ratio (X: 1.000, Y: 1.000), Frame Range (Start Fram: 1, End Fra: 120, Frame Ste: 1), Frame Rate (24 fps), Time Remapping.

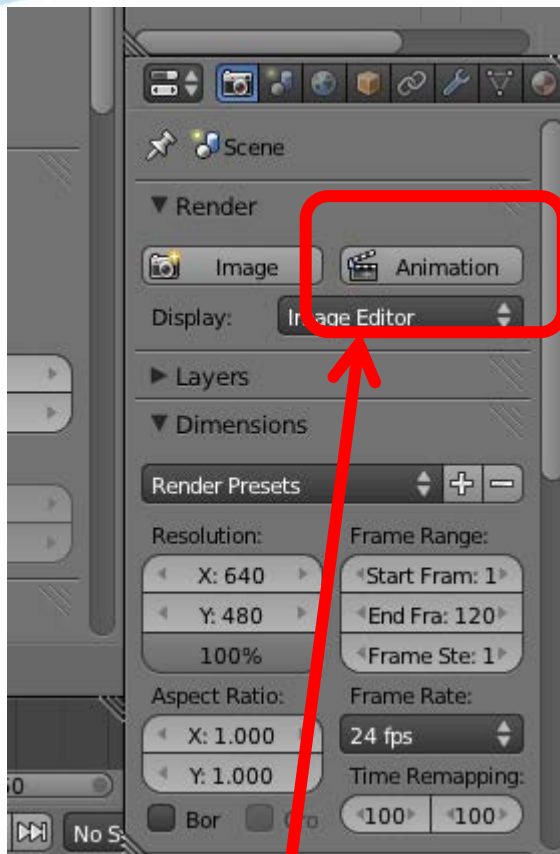


# Compositing: Output Video





# Compositing: Output video



**Click Animation!**



**Example of Composited result**

# Reference

- Blender
  - Official website  
<http://www.blender.org/>
  - 2.62 release log  
<http://www.blender.org/development/release-logs/blender-262/>
  - 2.61 demo files  
<http://www.blender.org/development/release-logs/blender-261/blender-261-demo-files/>
  - Overview of 2.62  
<http://www.youtube.com/watch?v=2-DXwepGNNw>

# Reference

- Blender

- Blender 2.6 Tutorial 17 - Camera Tracking

- <http://www.youtube.com/watch?v=qTwZO9Gi5yw>

- <http://www.youtube.com/watch?v=XZGx6UI0s2U>

- Match Moving Tutorial in Blender

- <http://www.youtube.com/watch?v=5oWctBTjGcl>

- Basic video tutorial for 2.56 & 2.57 [1~8] [Older vision]

- <https://www.youtube.com/watch?v=WSj23GDGNil>

- Basic video tutorial for Blender and Voodoo [Older vision]

- <http://www.youtube.com/watch?v=kPZbtKQ1a4g>

- <http://www.youtube.com/watch?v=sO4kmT-n3IU>

# Reference

- Voodoo
  - Python problem between Voodoo and Blender
    - Voodoo camera tracker and blender 2.57 fixed  
<http://0rz.tw/PqDVr>
    - Voodoo camera Import (io\_import\_voodoo\_camera.py)  
[Official released]  
<http://0rz.tw/BNDm8>
  - Voodoo document website  
<http://0rz.tw/c2ceR>
  - CINEMA 4D + VOODOO – TUTORIAL  
<http://www.youtube.com/watch?v=JWlW7ay0yi4>



# Reference

- Other Resources
  - K-Lite Codec Pack
    - Mega, Full, Standard and Basic
      - [http://www.codecguide.com/download\\_kl.htm](http://www.codecguide.com/download_kl.htm)
  - Video Editing Tools
    - 威力導演、繪聲繪影、 ...
    - Sony Vegas, Adobe After Effects, Premiere, ...
  - Sound/Music Editing Tools
    - Adobe Audition ( original cooledit ), Goldwave, ...

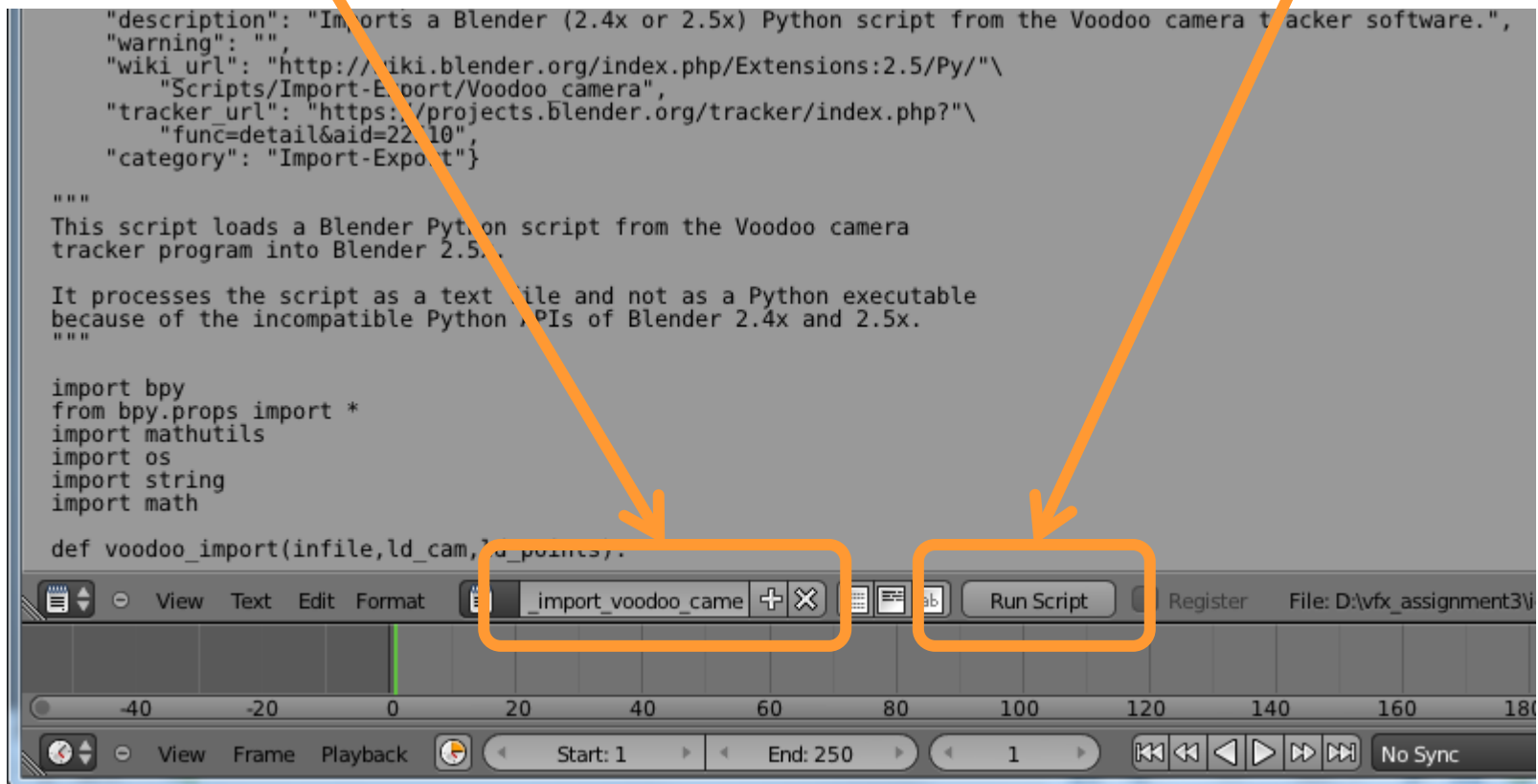
*Thank you  
for your attention!*



# Import 3D Motions : Open Python Script

Select `io_import_voodoo_camera.py`

Run Python Script





# Import 3D Motions : Open Python Script

