

ZOETROPE



**Co-funded by
the European Union**



2024-1-PL01-KA220-VET-000243150

TIME FOR A LITTLE MORE DIFFICULT TASK

**WE WILL MAKE A
PROTOTYPE MODEL
SHOWING HOW ANIMATION
IS CREATED**

ZOETROP

**IF YOU WANT BY USING
THE PRESENTED METHOD AND 3D PRINTER
YOU CAN BUILD YOUR OWN PROTOTYPE**





POWER OF AR AND VR



LOG IN TO MIXAMO YOU CAN CREATE A FREE ACCOUNT

Adobe
Sign in or create an account

Sign in
New user? [Create an account](#)

Email address

Or

Continue with Google

Continue with Facebook

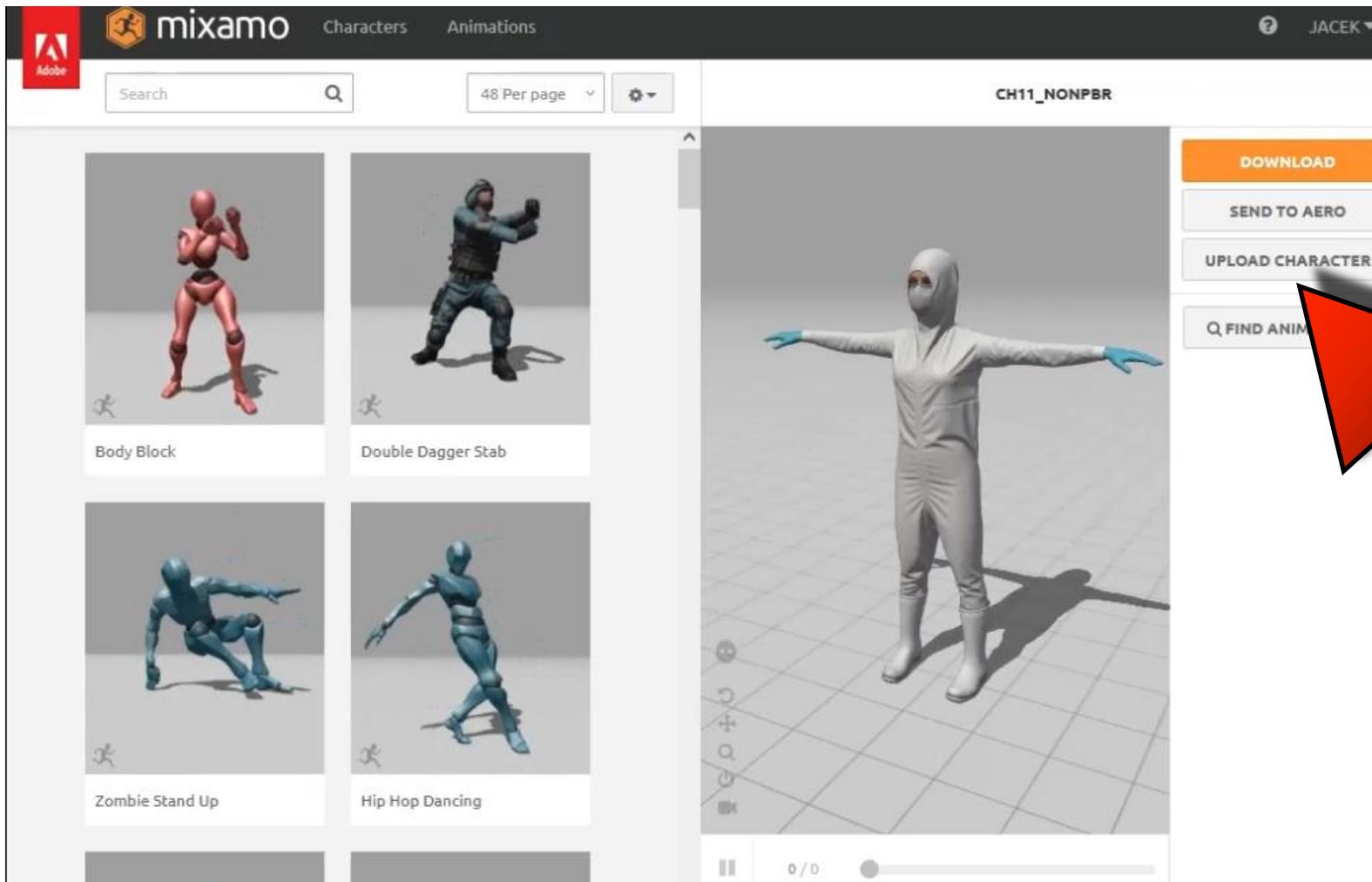
Continue with Apple

[View more](#)

[Get help signing in](#)

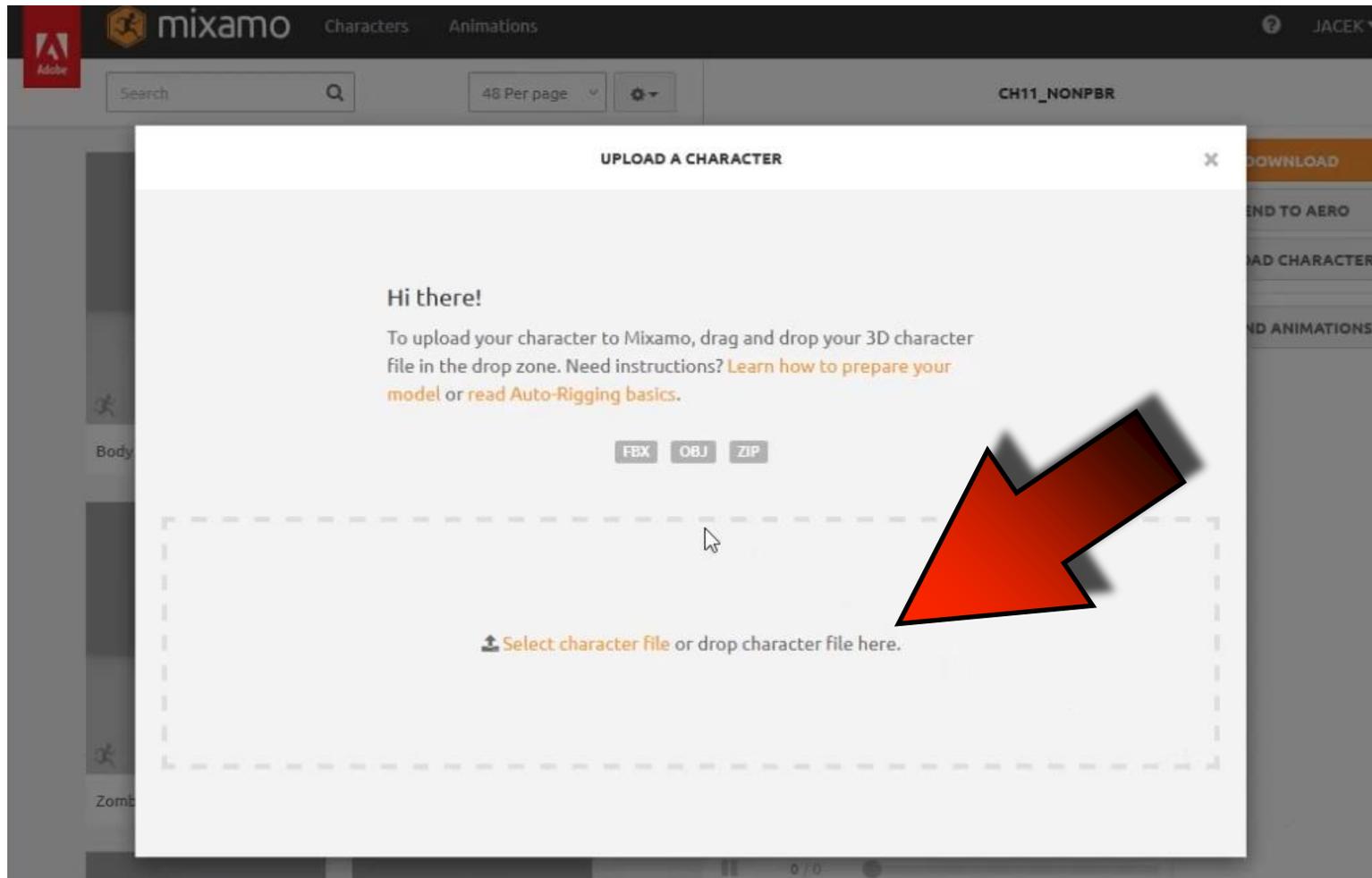
ZOETROPE

CLICK ON **UPLOAD CHARACTER**



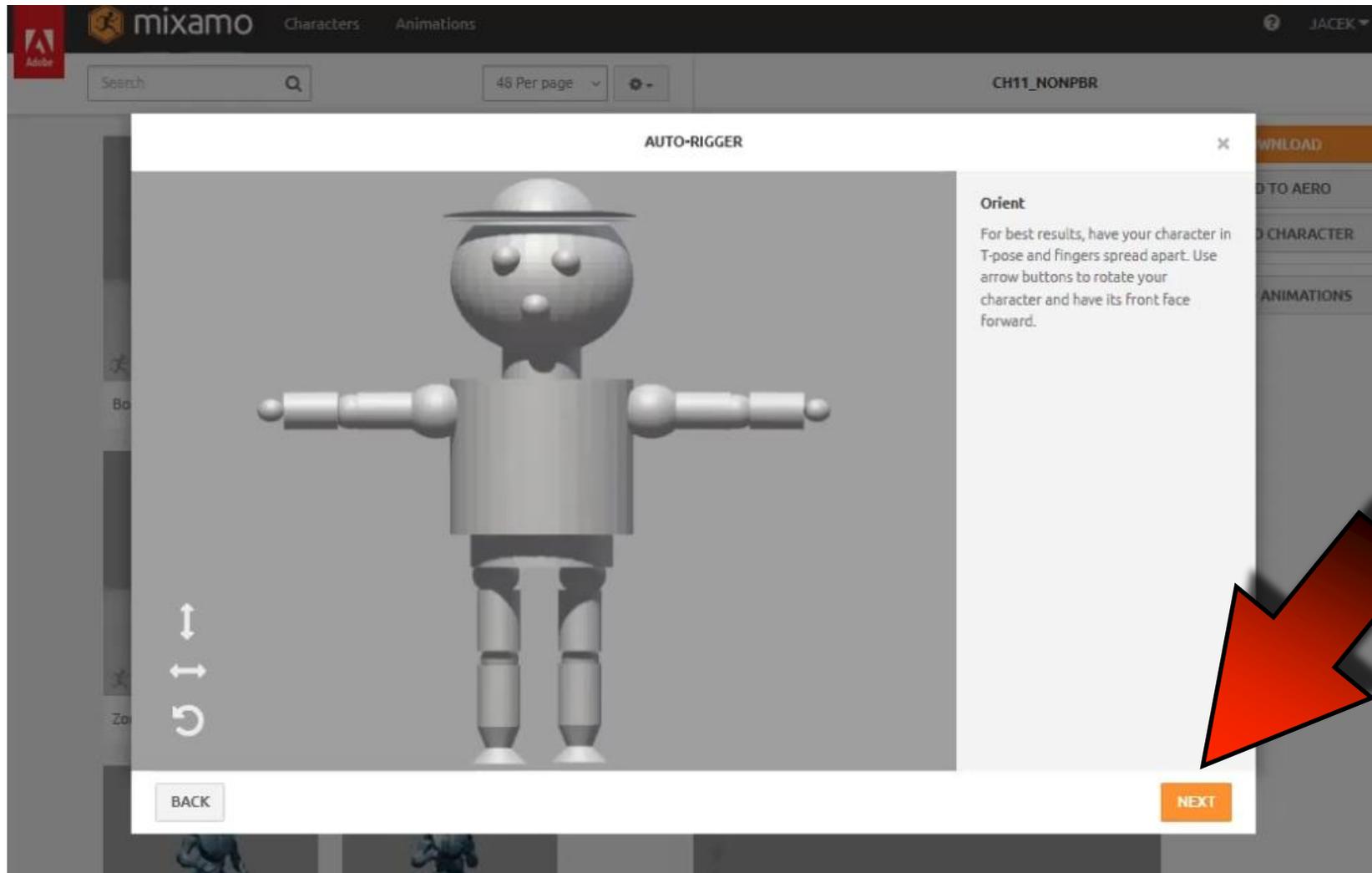
POWER OF AR AND VR

**DRAG HERE YOUR PREVIOUSLY DRAWN IN
BLENDER PROGRAM **YOUR ROBOT****



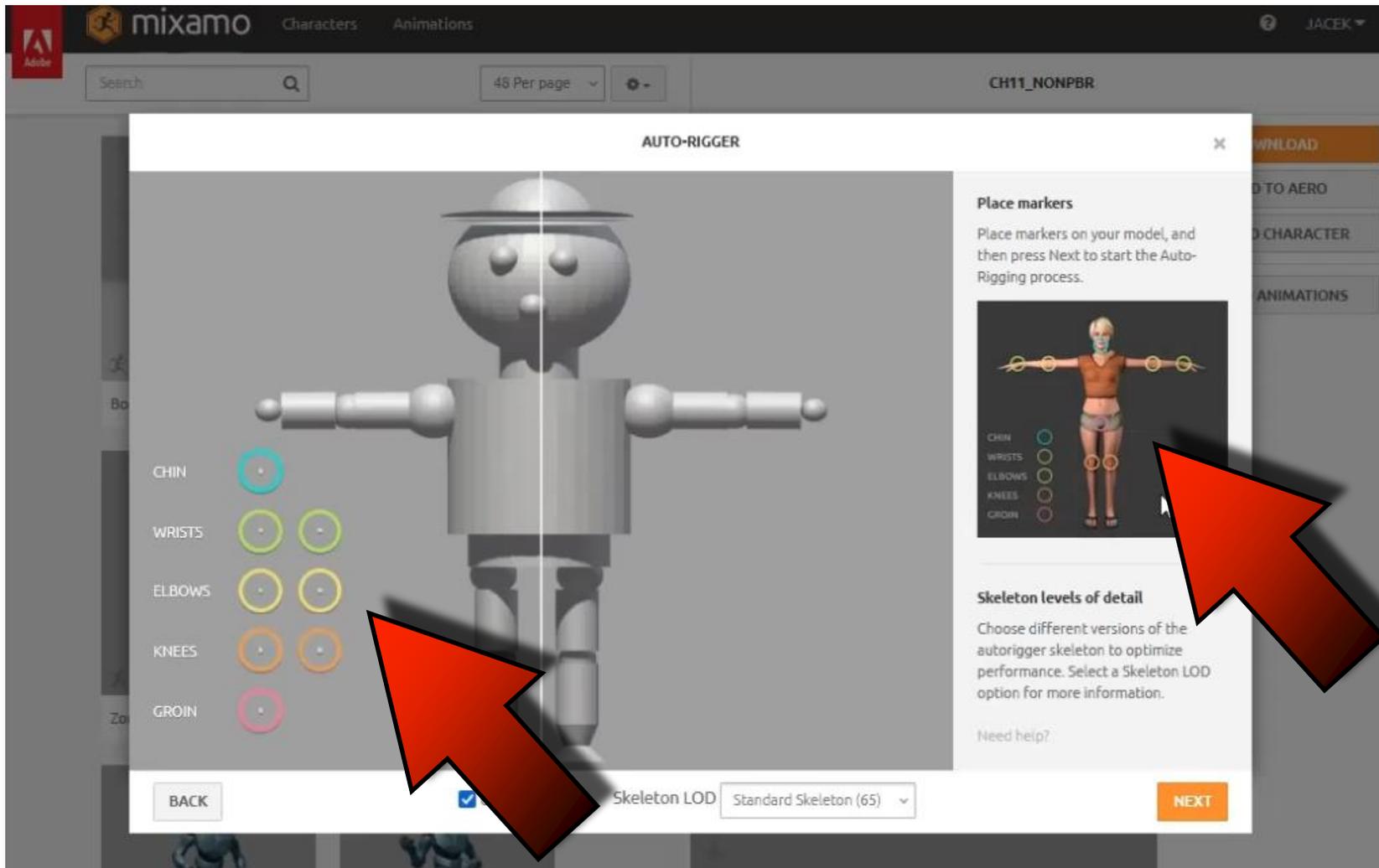
ZOETROPE

CLICIK ON **NEXT**



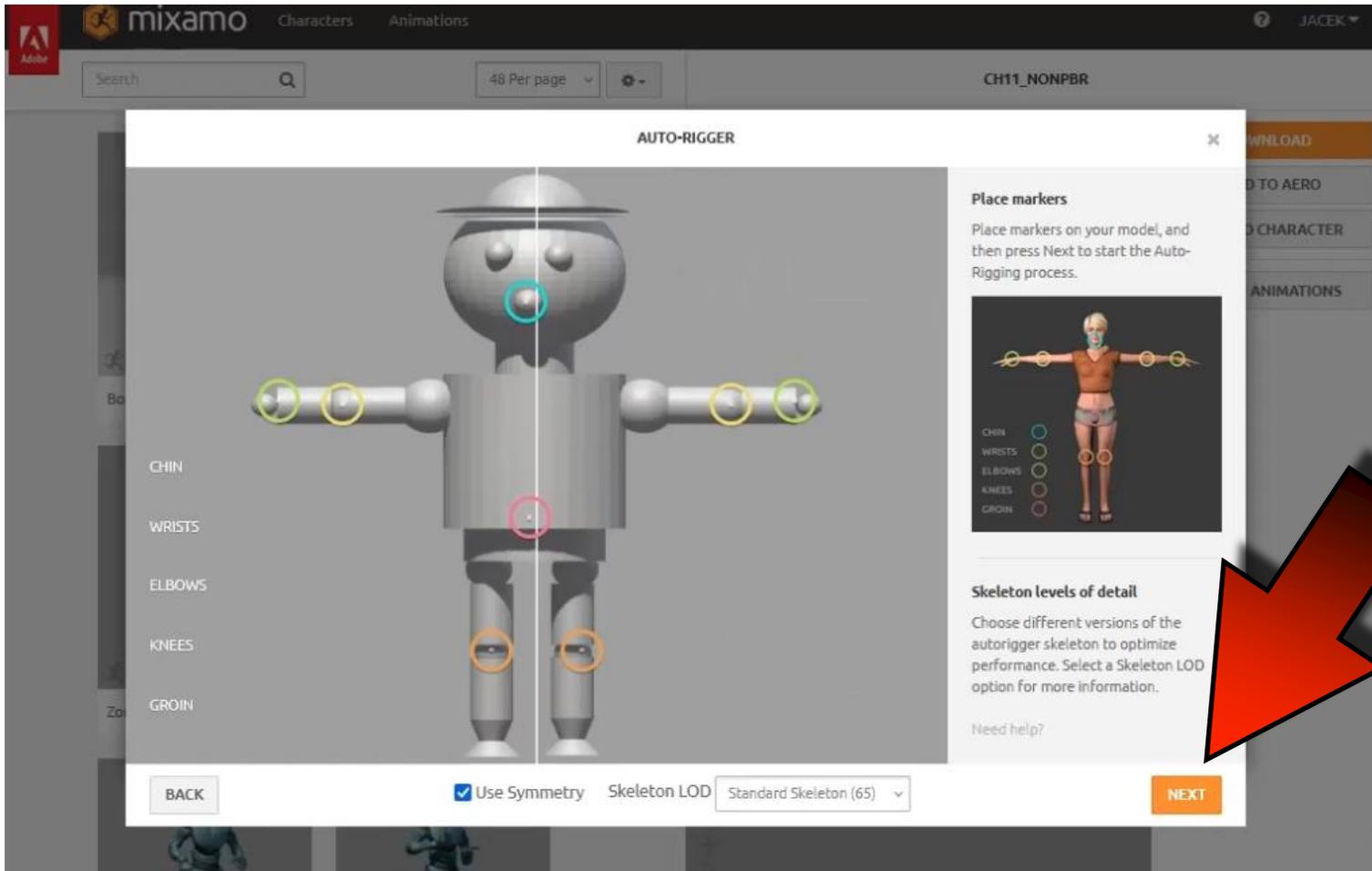
POWER OF AR AND VR

ARRANGEMENT OF ELEMENTS ACCORDING TO PATTERN



ZOETROPE

CLICK ON **NEXT**



AUTO-RIGGER

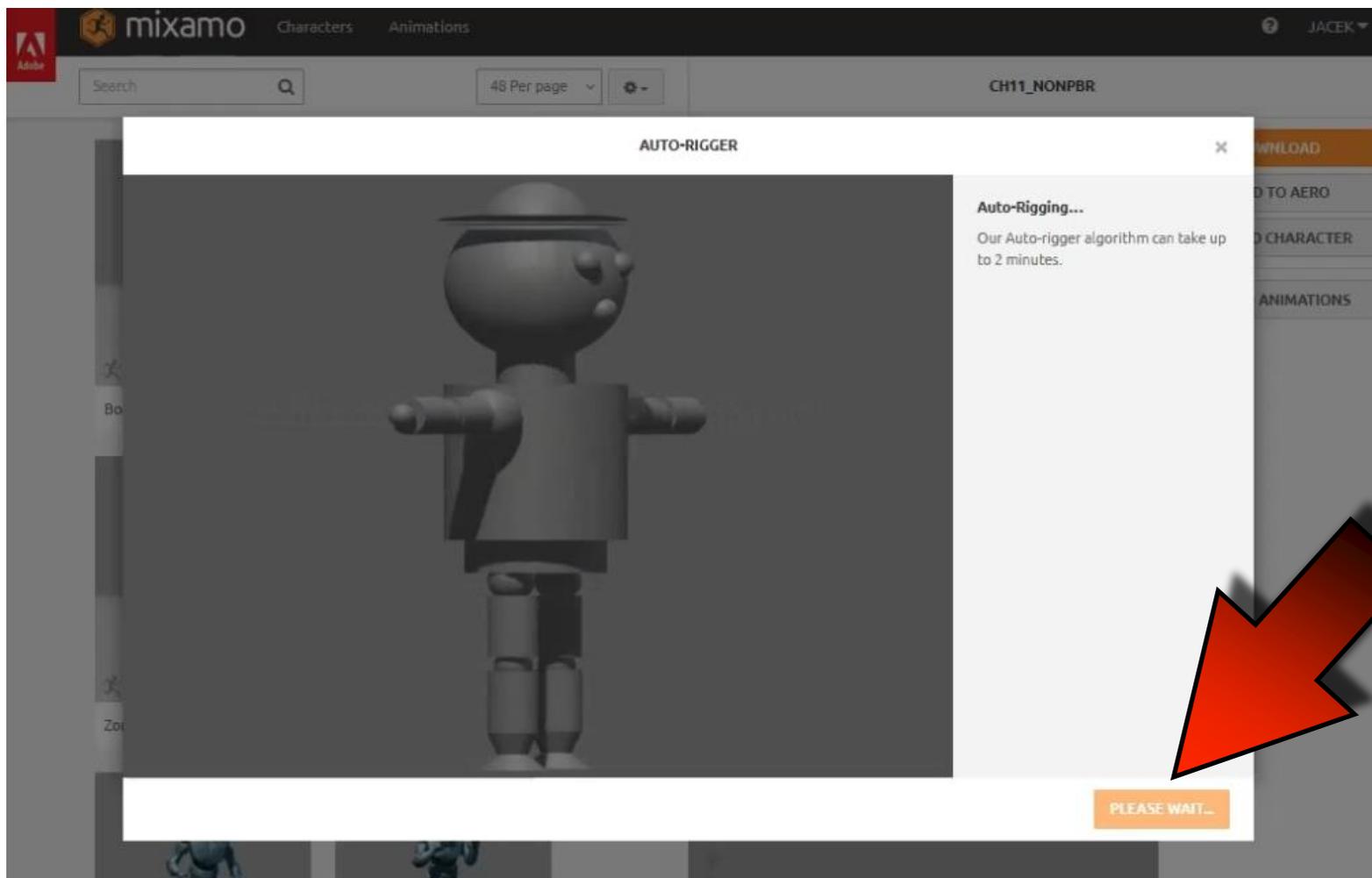
Place markers
Place markers on your model, and then press Next to start the Auto-Rigging process.

Skeleton levels of detail
Choose different versions of the autorigger skeleton to optimize performance. Select a Skeleton LOD option for more information.

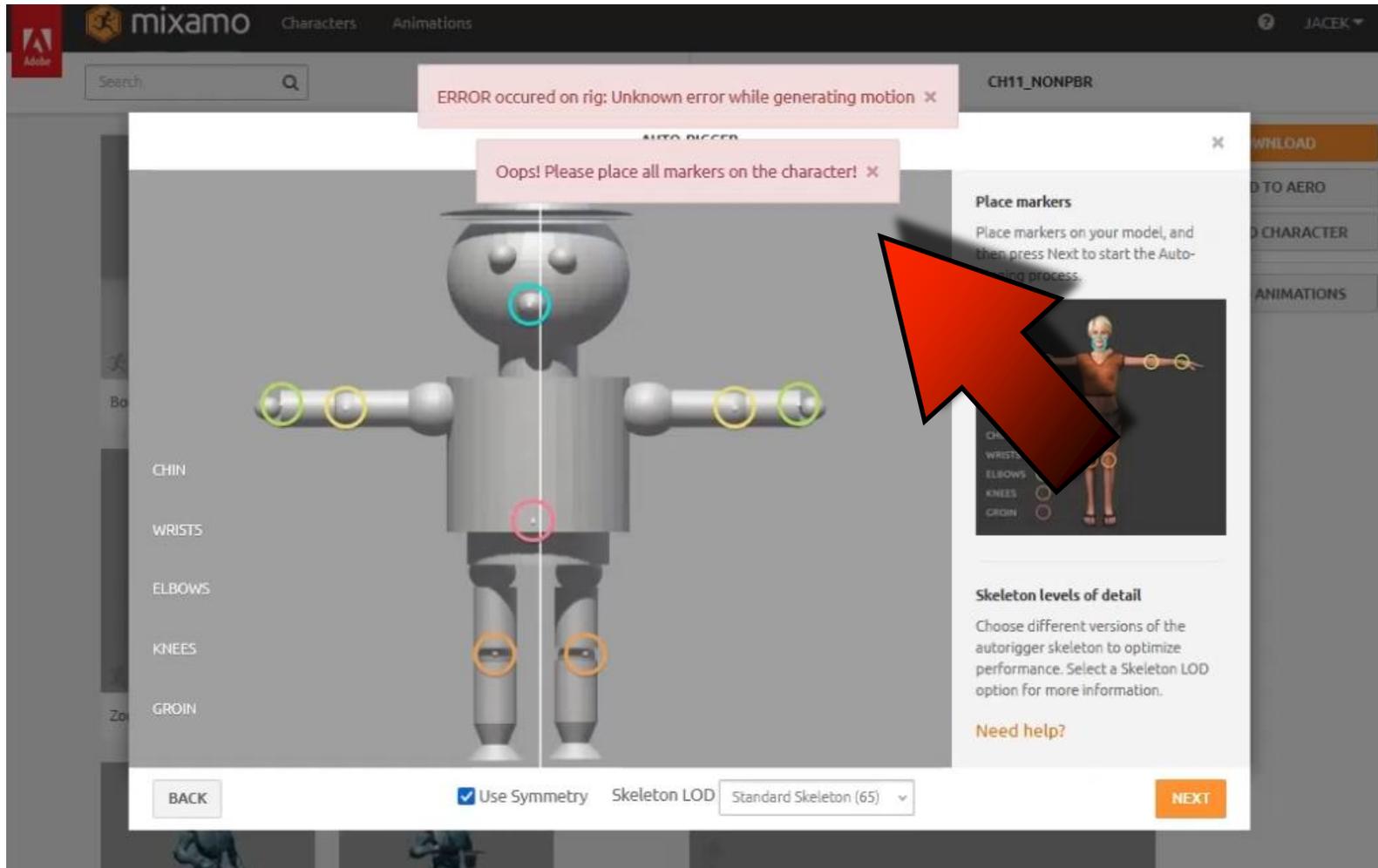
Need help?

BACK Use Symmetry Skeleton LOD Standard Skeleton (65) **NEXT**

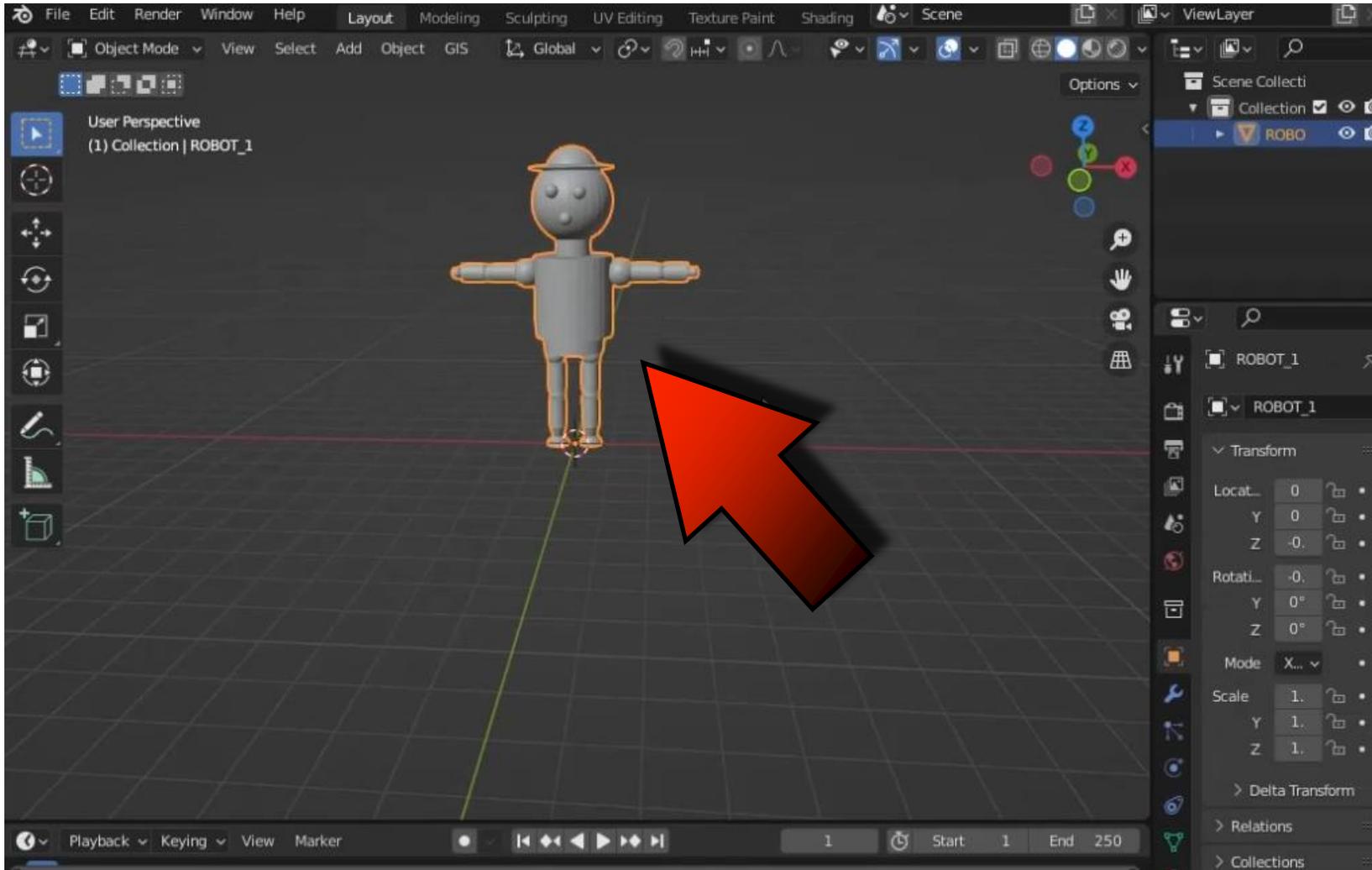
YOU HAVE TO **WAIT A MOMENT**



WHEN THERE IS AN ERROR IN THE MODEL A CORRESPONDING MESSAGE WILL BE DISPLAYED



OPEN ROBOT IN BLENDER

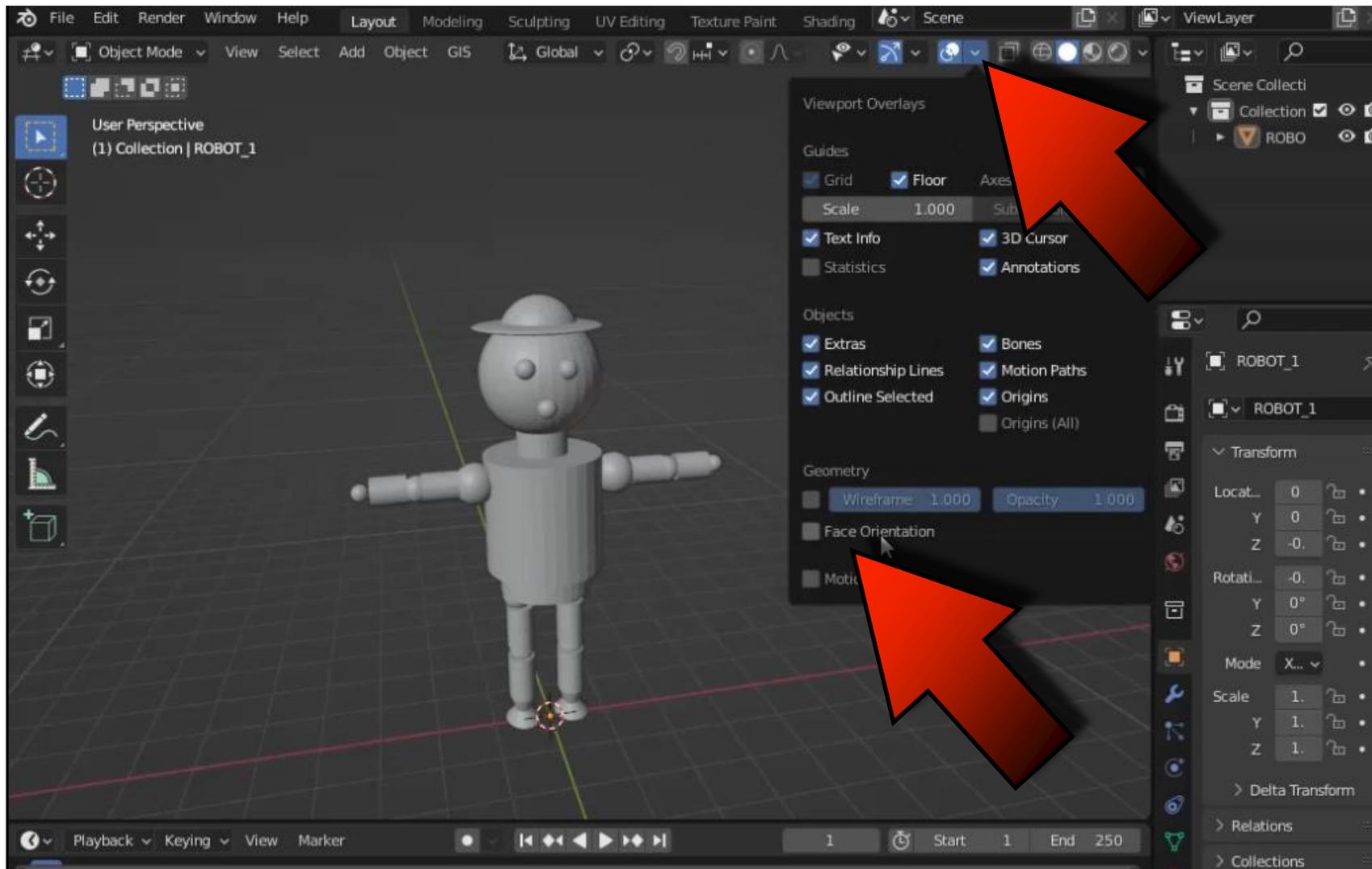




POWER OF AR AND VR

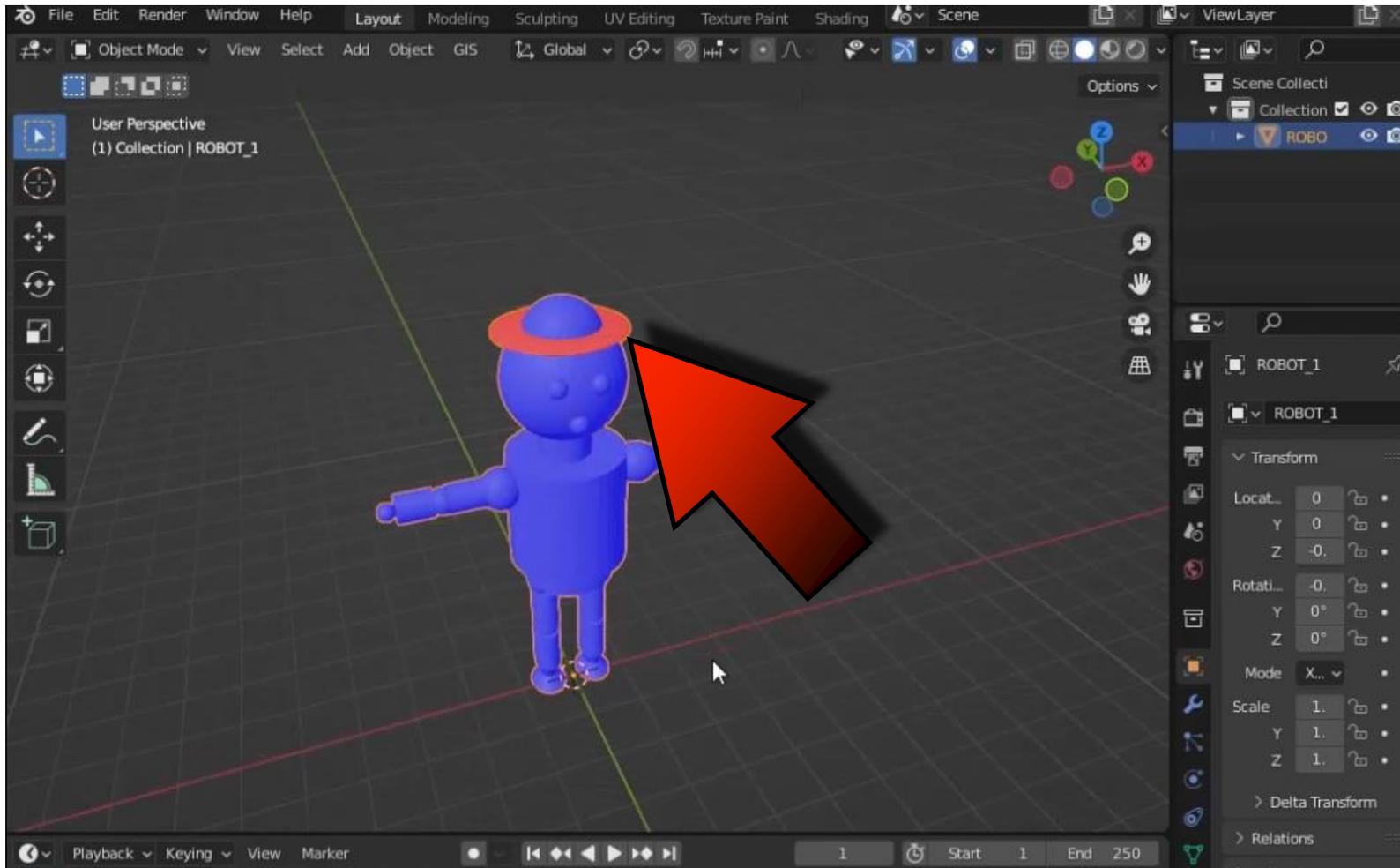


TURN ON **FACE ORIENTATION**



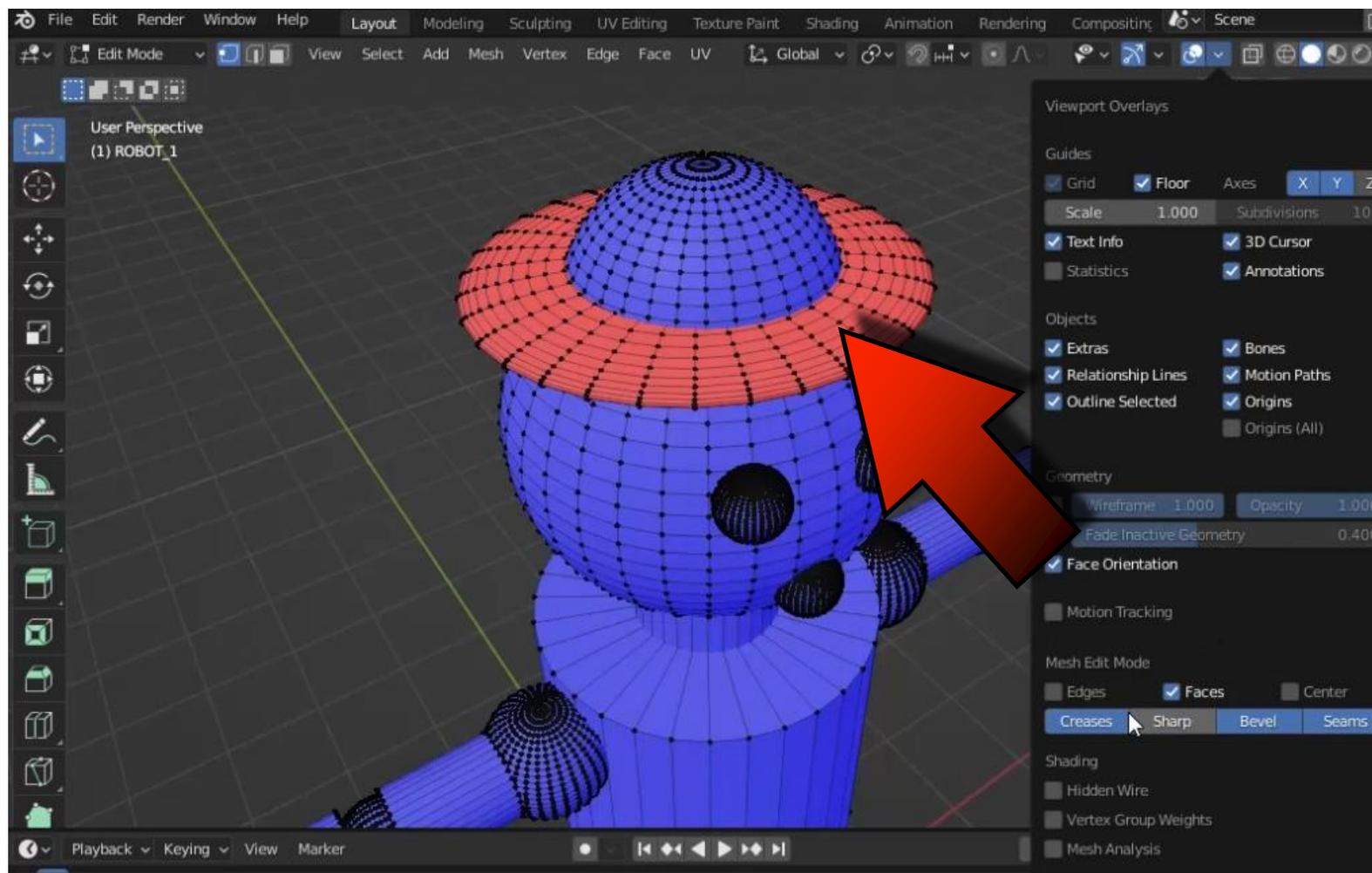
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ONE ELEMENT HAS AN **INVERTED WALL**



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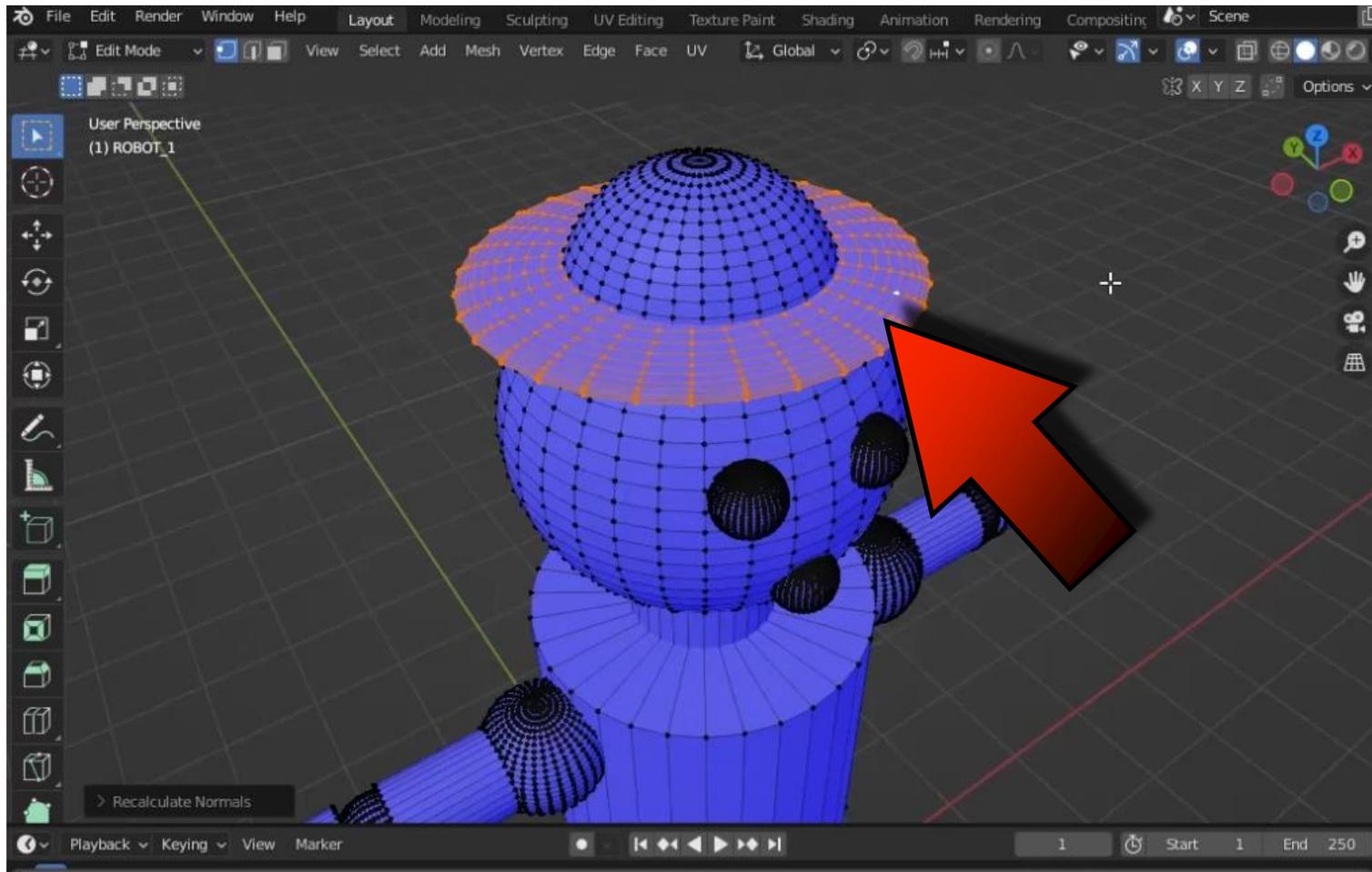
**ENTER EDIT MODE AND USE CTRL+L
MEANS AN INCORRECTLY DRAWN ELEMENT**



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WITH **SHIF+N** OR **SHIFT+CTRL+N**
REVERSE WALLS



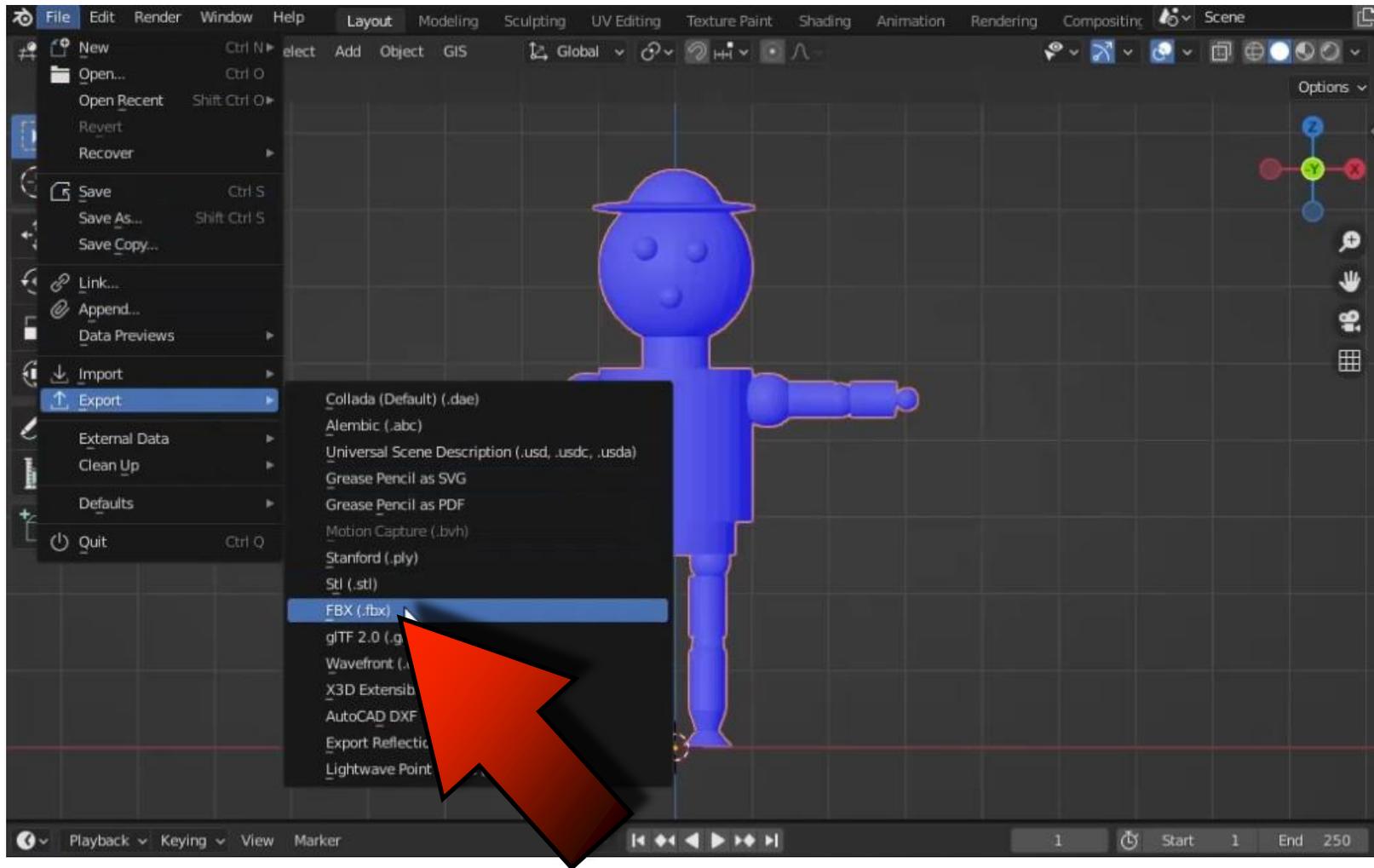
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POWER OF AR AND VR

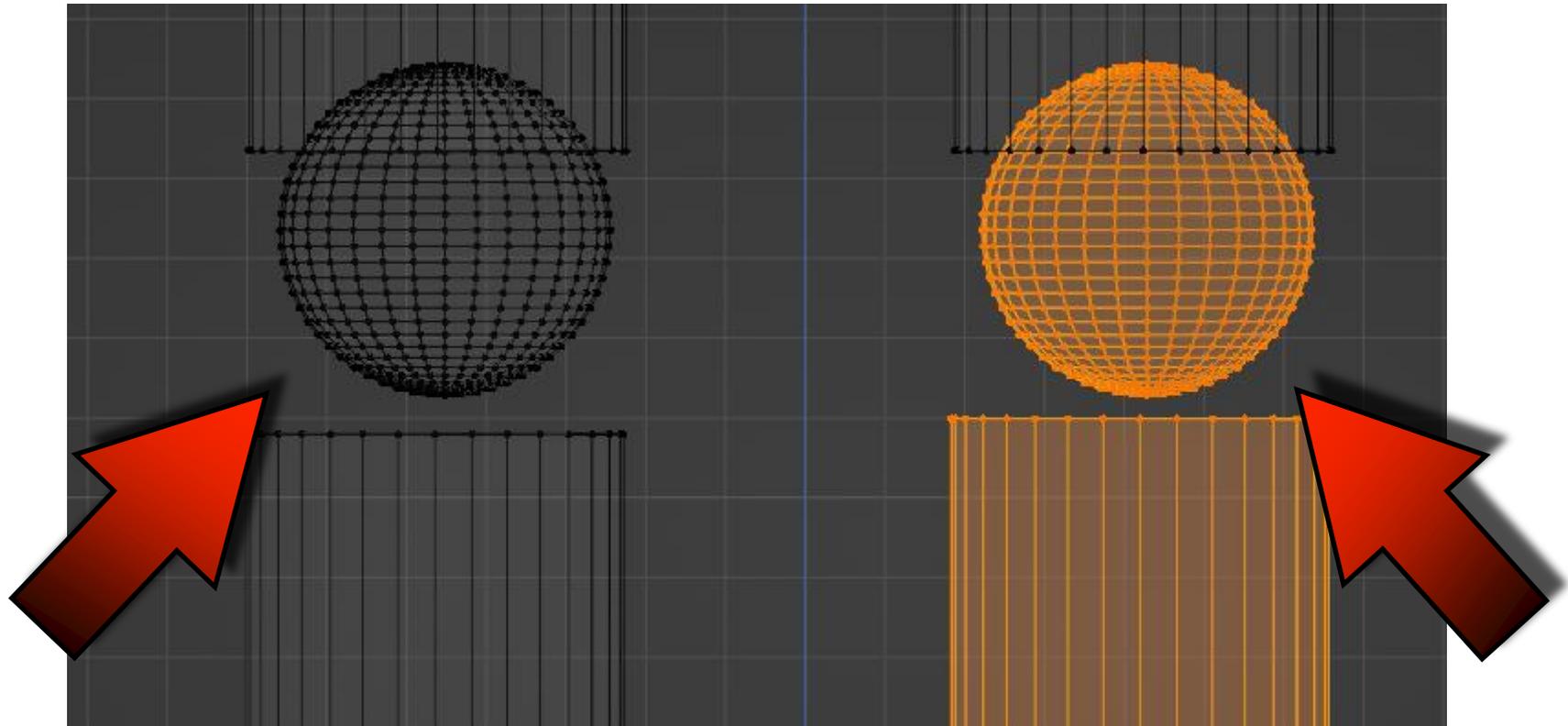


EXPORT CORRECT MODEL TO FBX



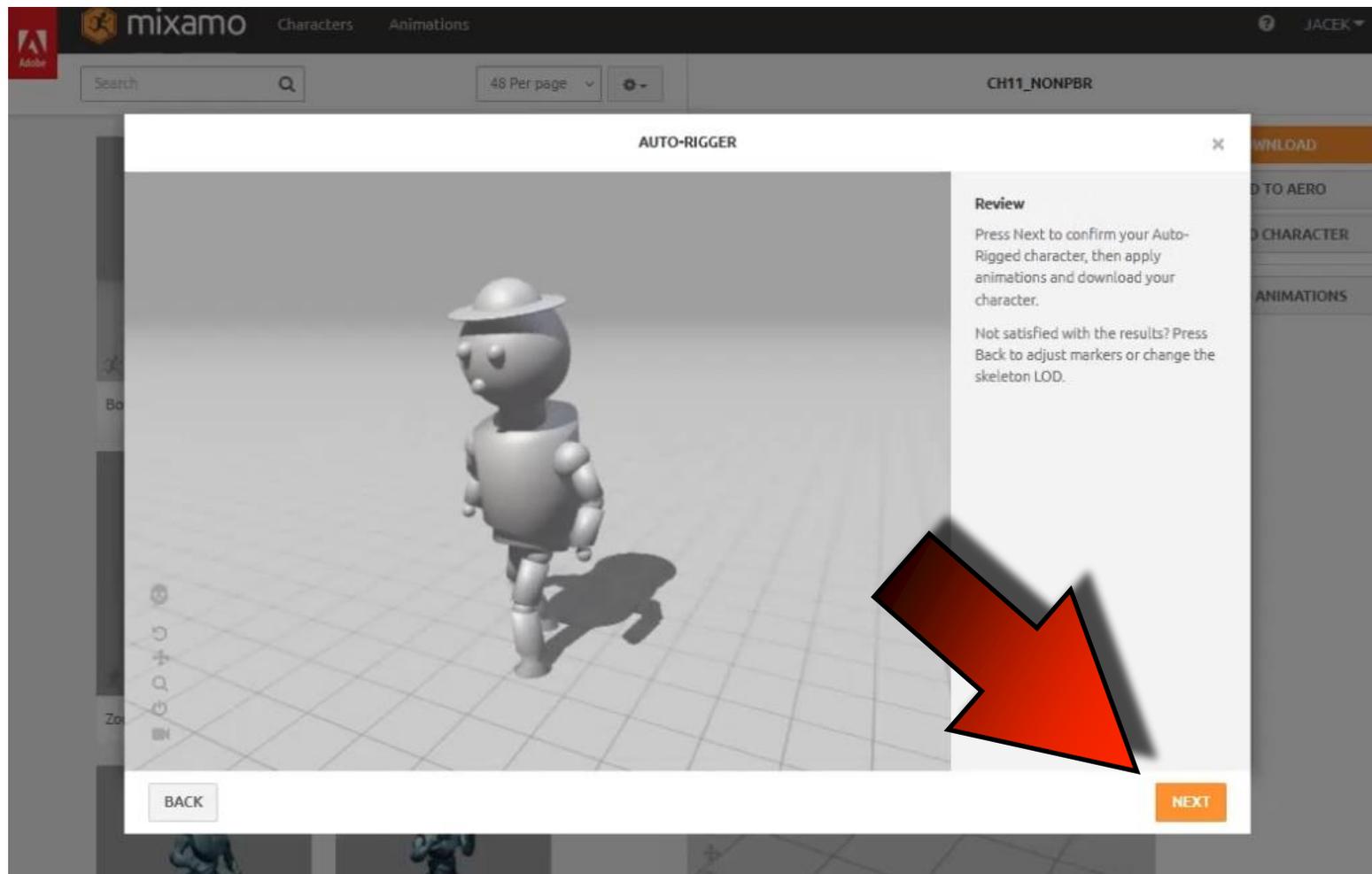
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**DO NOT LEAVE ANY SPACE
BETWEEN THE ELEMENTS**



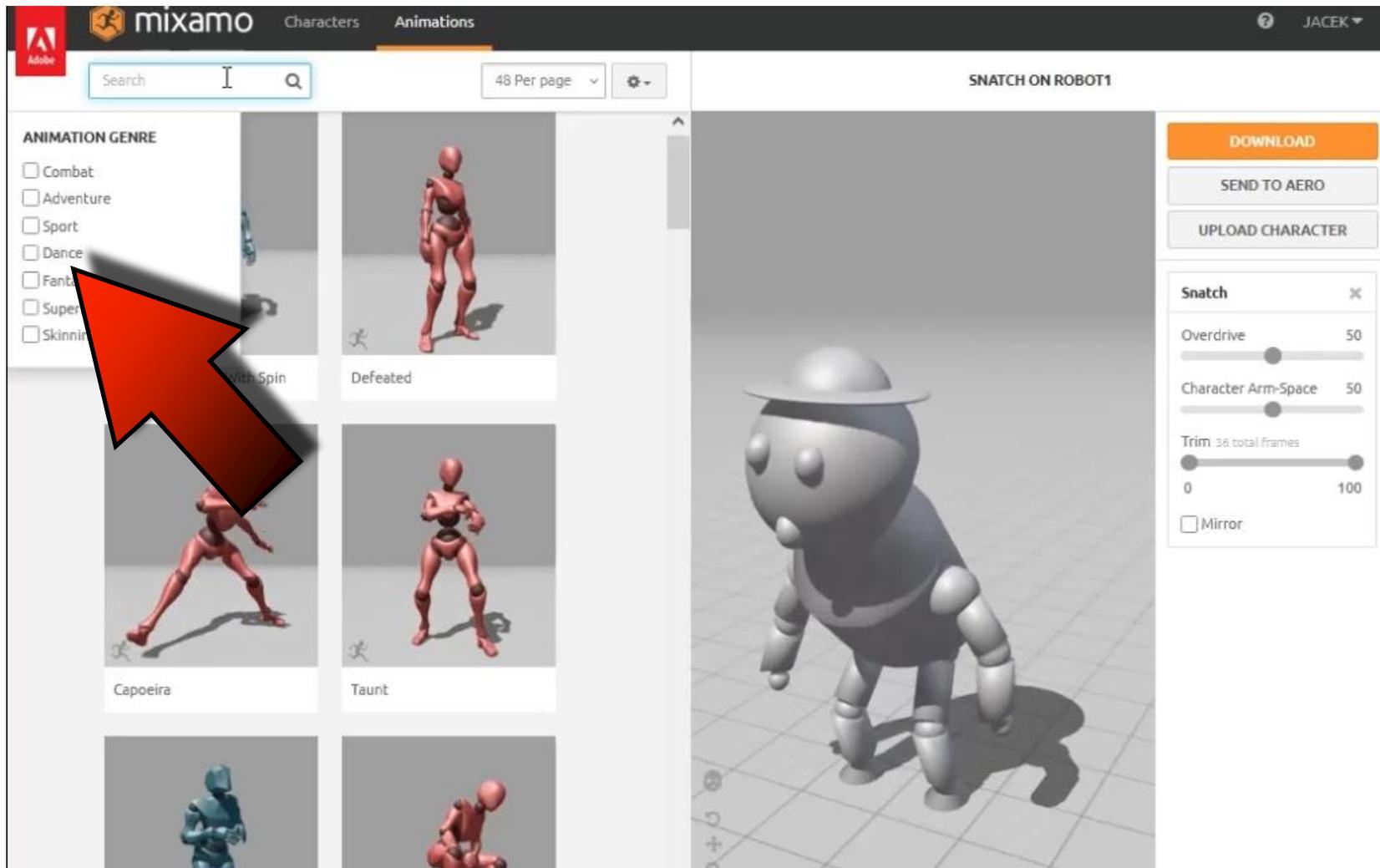
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**THIS MODEL MIXAMO SYSTEM WILL ACCEPT
CLICK ON NEXT**



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MARK DANCE



The screenshot displays the Mixamo website interface. At the top, the navigation bar includes the Adobe logo, the Mixamo logo, and tabs for "Characters" and "Animations". A search bar is located on the left, and a user profile "JACEK" is visible on the right. The main content area is divided into a left sidebar, a central grid of animation thumbnails, and a large 3D preview window on the right.

ANIMATION GENRE

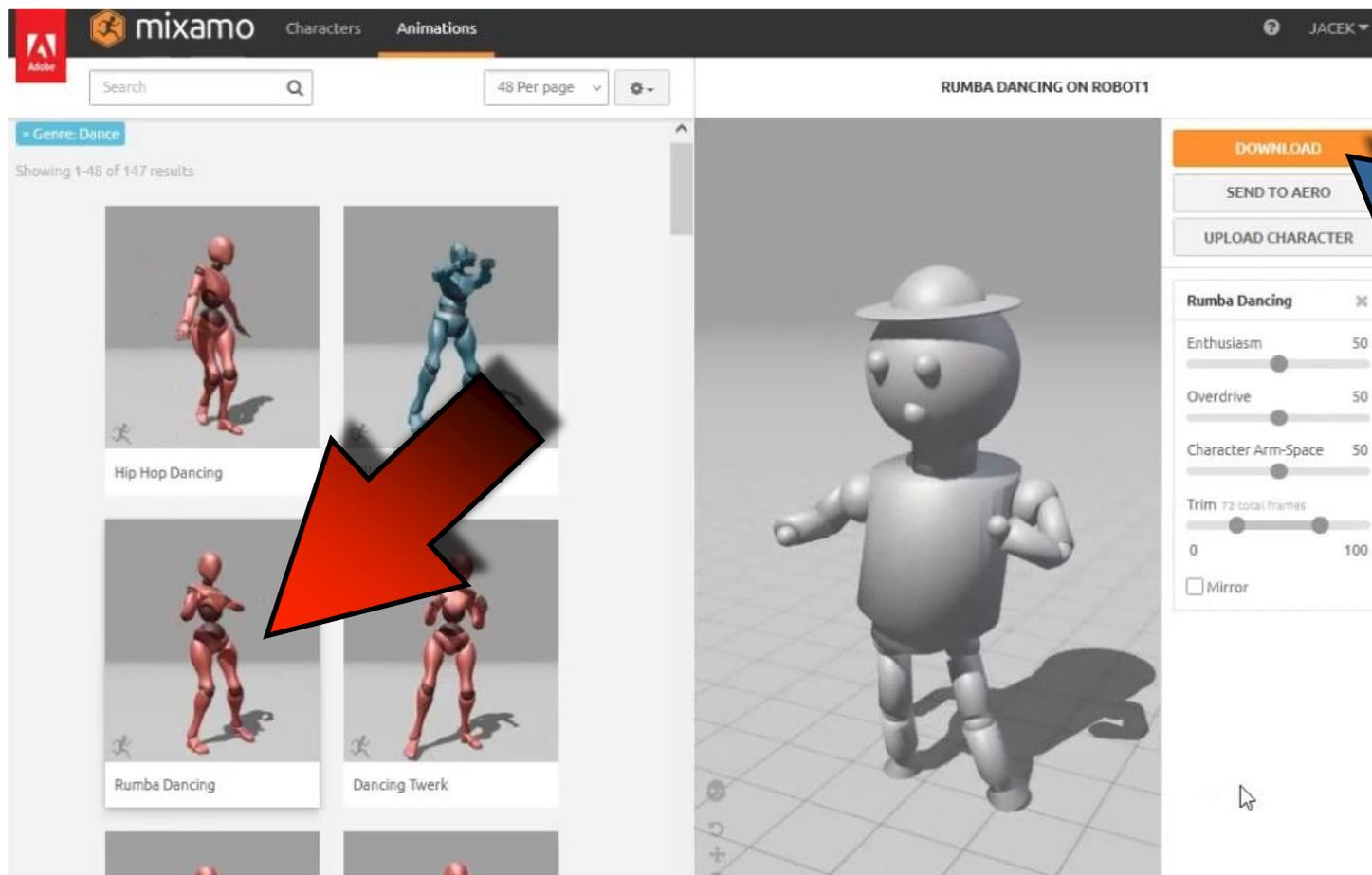
- Combat
- Adventure
- Sport
- Dance
- Fantasy
- Superhero
- Skinning

The central grid shows several animation thumbnails for a red humanoid character, including "with Spin", "Defeated", "Capoeira", and "Taunt". A large red arrow points from the "Dance" genre checkbox to the "Capoeira" thumbnail.

The right preview window, titled "SNATCH ON ROBOT1", shows a 3D model of a grey robot character wearing a hat. Below the preview are control panels:

- DOWNLOAD** (orange button)
- SEND TO AERO** (grey button)
- UPLOAD CHARACTER** (grey button)
- Snatch** (close icon)
- Overdrive** (slider set to 50)
- Character Arm-Space** (slider set to 50)
- Trim** (36 total frames, slider from 0 to 100)
- Mirror

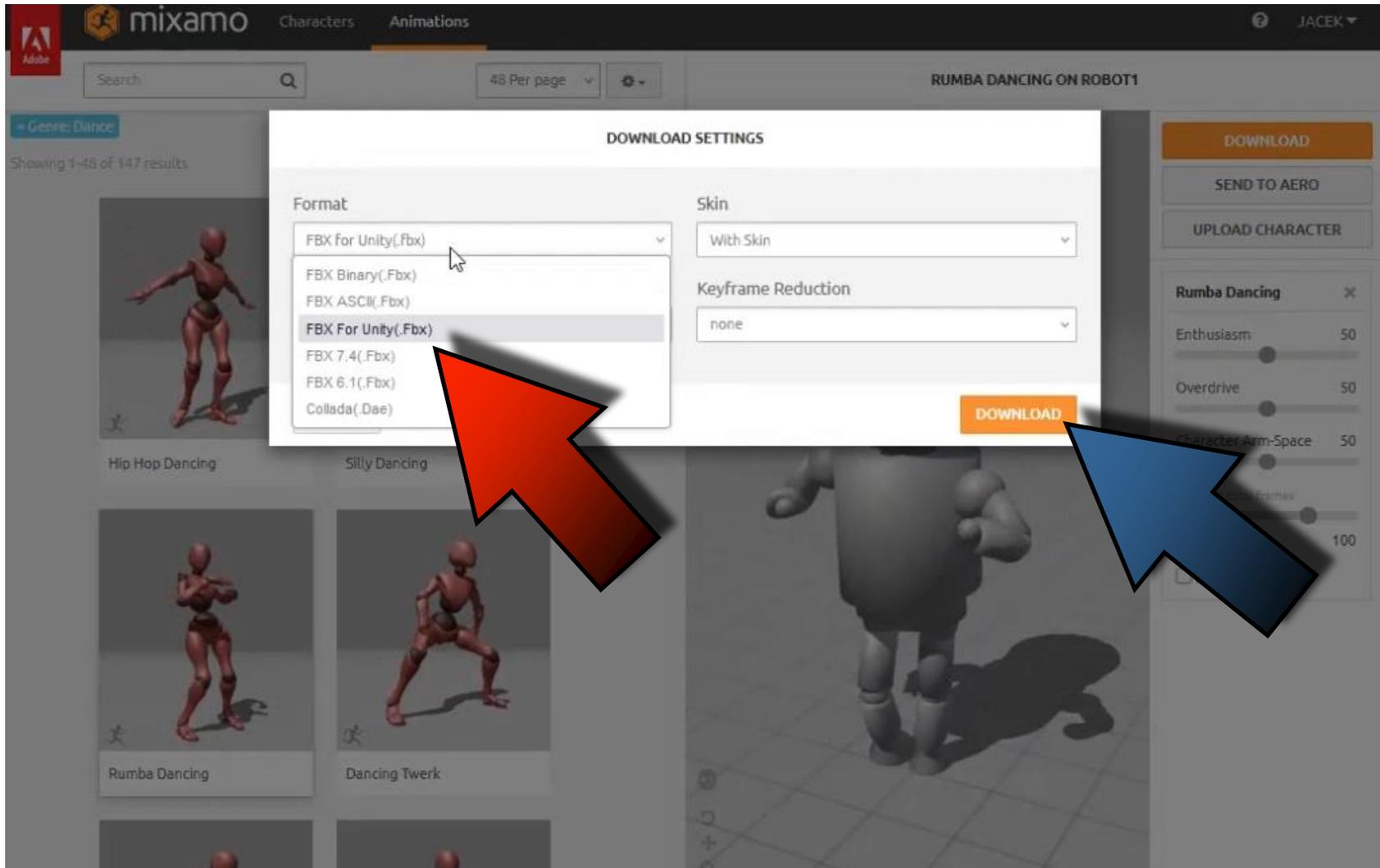
CHOOSE **RUMBA DANCING** AND CLICK ON **DOWNLOAD**



The screenshot shows the Mixamo website interface. On the left, a search bar contains 'RUMBA DANCING ON ROBOT1'. Below the search bar, a grid of animation thumbnails is displayed. The first thumbnail is labeled 'Hip Hop Dancing', the second 'Rumba Dancing', and the third 'Dancing Twerk'. A large red arrow points to the 'Rumba Dancing' thumbnail. On the right, a 3D robot character is shown in a rumba pose. A large blue arrow points to the 'DOWNLOAD' button in the top right corner of the interface. Below the 'DOWNLOAD' button are buttons for 'SEND TO AERO' and 'UPLOAD CHARACTER'. A settings panel on the right side of the 3D view shows sliders for 'Enthusiasm' (50), 'Overdrive' (50), and 'Character Arm-Space' (50), along with a 'Trim' slider (72 total frames) and a 'Mirror' checkbox.

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CHOOSE **FBX** FOR **UNITY**
AND CLICK ON **DOWNLOAD**



The screenshot shows the Mixamo website interface. A "DOWNLOAD SETTINGS" dialog box is open, displaying the following options:

- Format:** A dropdown menu with "FBX For Unity(.Fbx)" selected. Other options include "FBX Binary(.Fbx)", "FBX ASCII(.Fbx)", "FBX 7.4(.Fbx)", "FBX 6.1(.Fbx)", and "Collada(.Dae)".
- Skin:** A dropdown menu with "With Skin" selected.
- Keyframe Reduction:** A dropdown menu with "none" selected.

A large red arrow points to the "FBX For Unity(.Fbx)" option in the Format dropdown. A large blue arrow points to the "DOWNLOAD" button in the dialog box. The background shows a grid of character animation thumbnails, including "Hip Hop Dancing", "Silly Dancing", "Rumba Dancing", and "Dancing Twerk". The "Rumba Dancing" thumbnail is highlighted. The right sidebar shows a "DOWNLOAD" button and a "SEND TO AERO" button. Below these are sliders for "Rumba Dancing" (Enthusiasm: 50, Overdrive: 50, Character Arm-Space: 50, Max: 100).

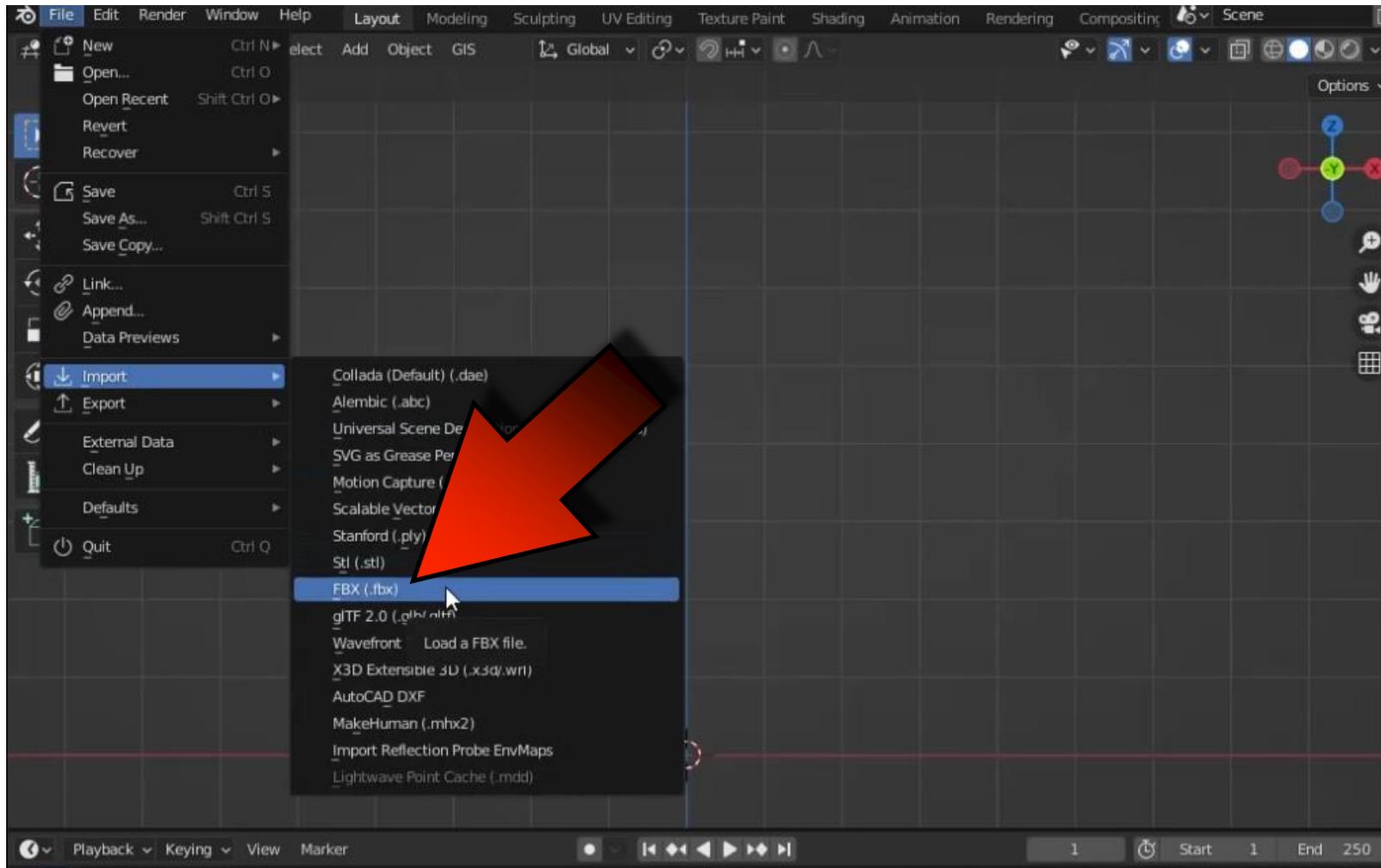
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IMPORT NEW MODEL TO BLENDER



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**BY PRESSING SPACE YOU WILL SEE
ANIMATION WITH KEYFRAMES**



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POWER OF AR AND VR



SCALE ANIMATIONS TO 60 FRAME WITH THE S KEY



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POWER OF AR AND VR

REDUCE VIDEO TO 60 FRAMES

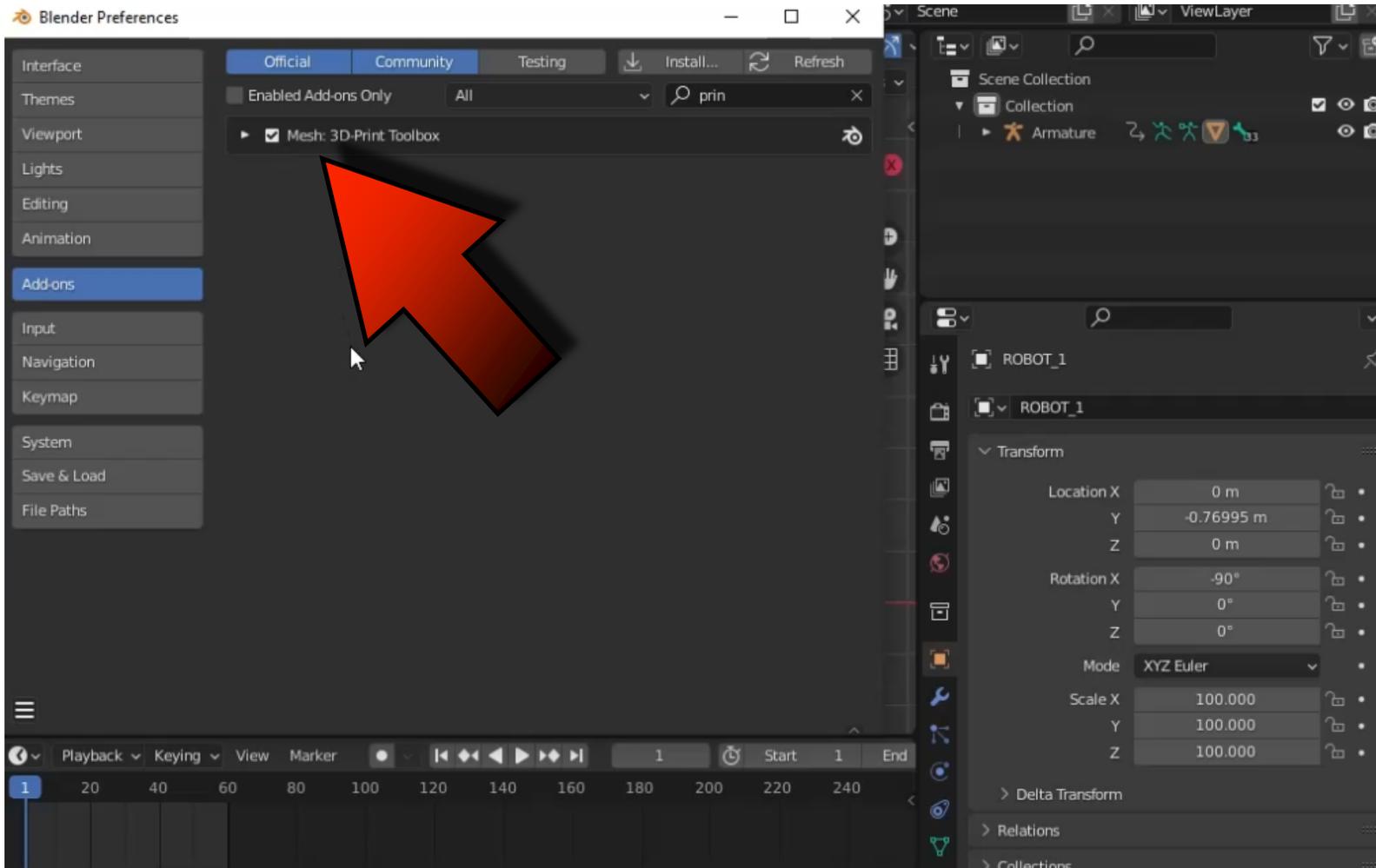


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BY PRESSING THE **N KEY WE EXTEND
THE WINDOW ON THE RIGHT SIDE**



INSTALL ADD-ON 3D PRINT TOOLBOX



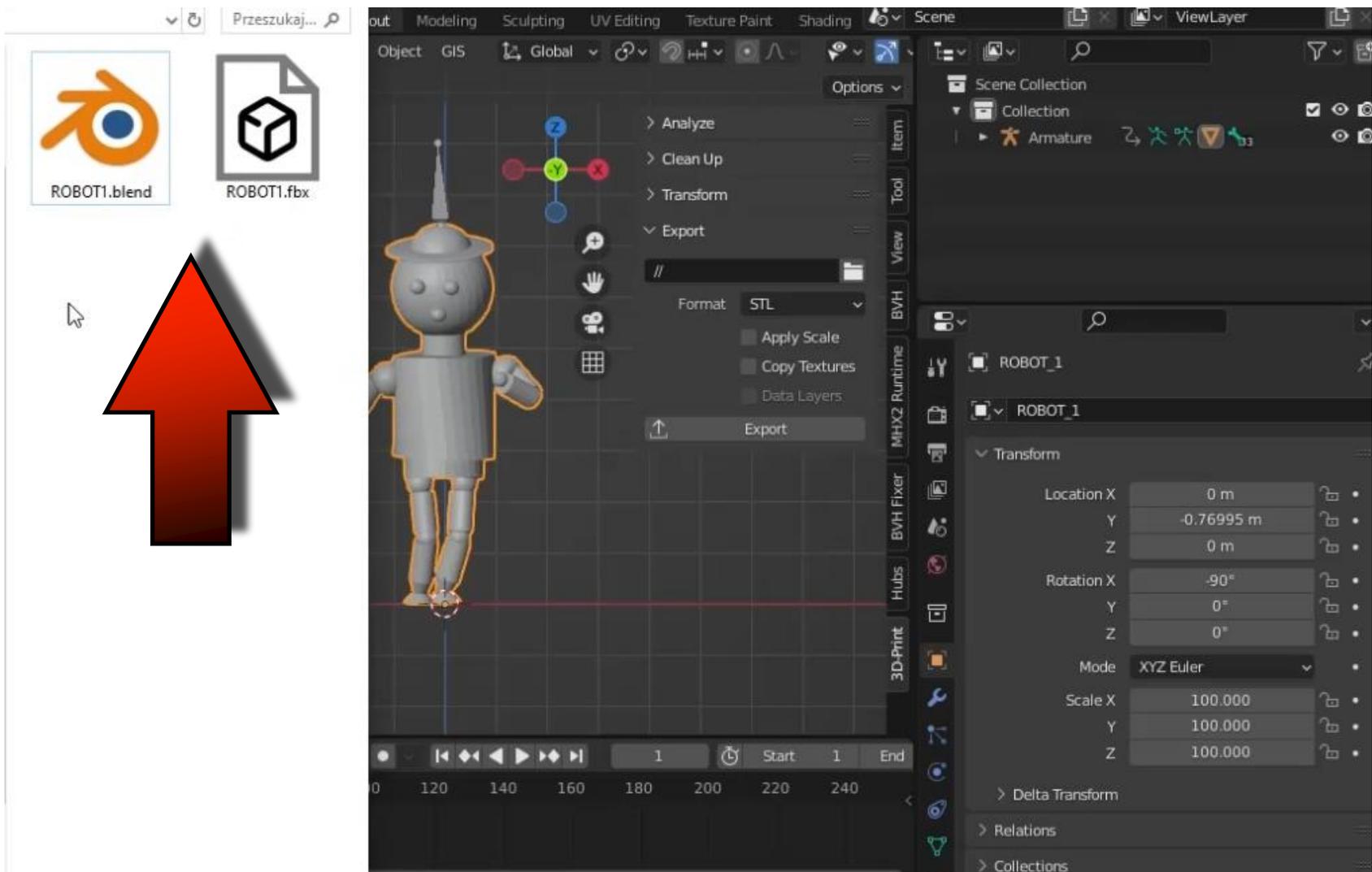
**WITH IT WE WILL QUICKLY CREATE MANY FILES
THAT CAN ALSO BE USED FOR 3D PRINTING**



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**CURRENTLY WE HAVE THIS SITUATION
WITH OUR FILES**



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CHANGE MODEL NAME TO **R_01**





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THIS IS IMPORTANT
THE MODEL MUST BE SELECTED



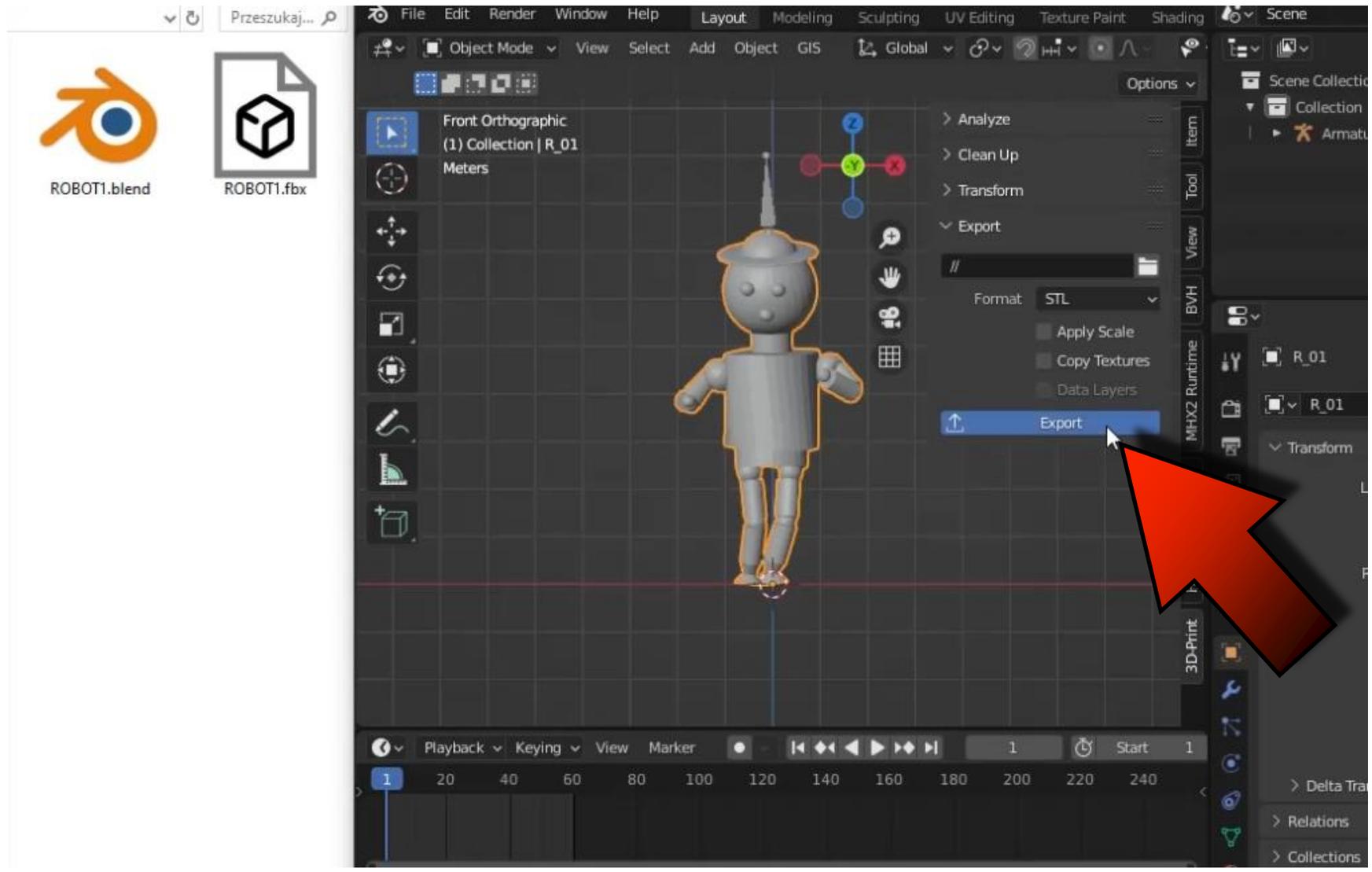
ZOETROPE



POWER OF AR AND VR



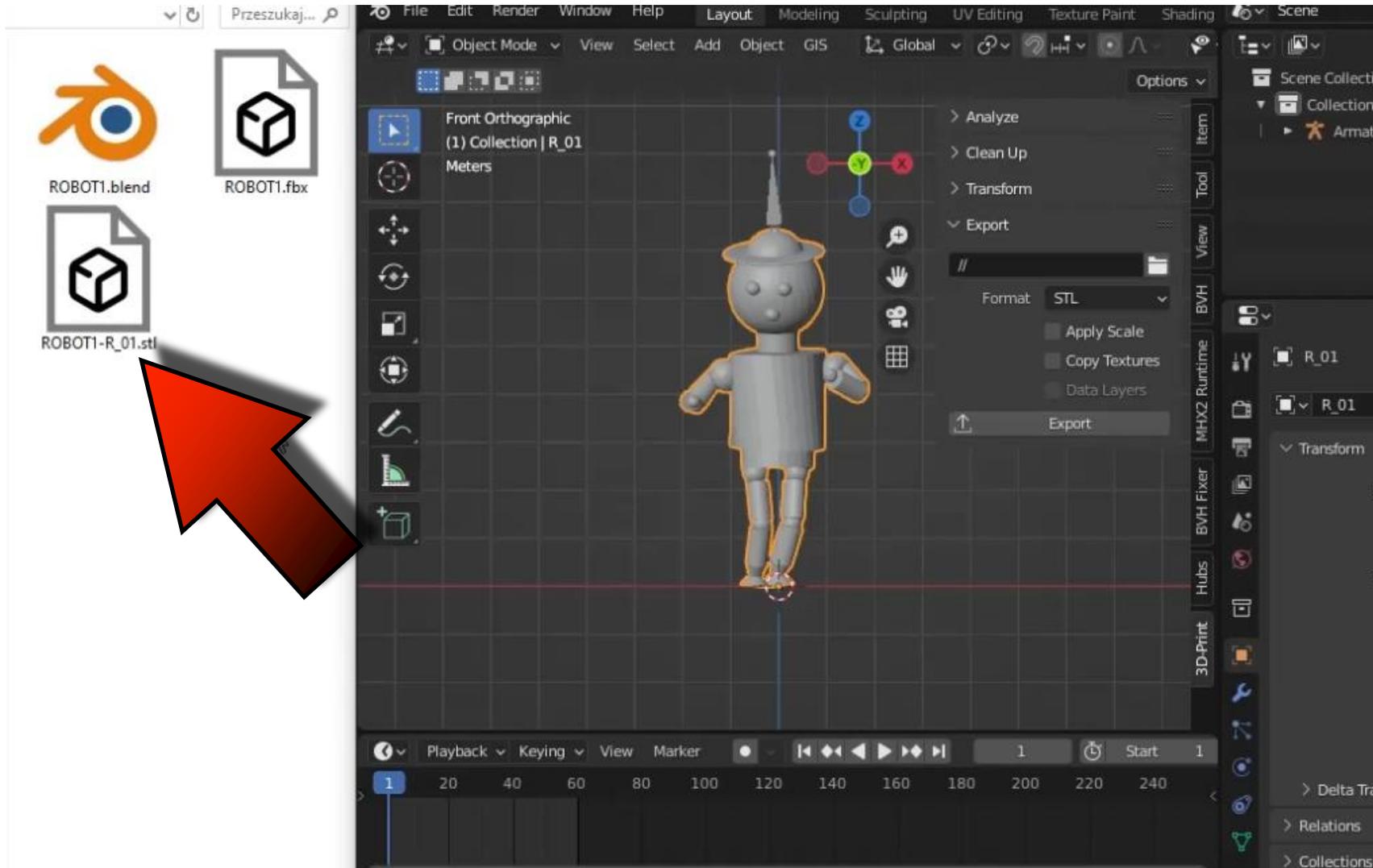
CLICK ON **EKSPORT**



ZOETROPE

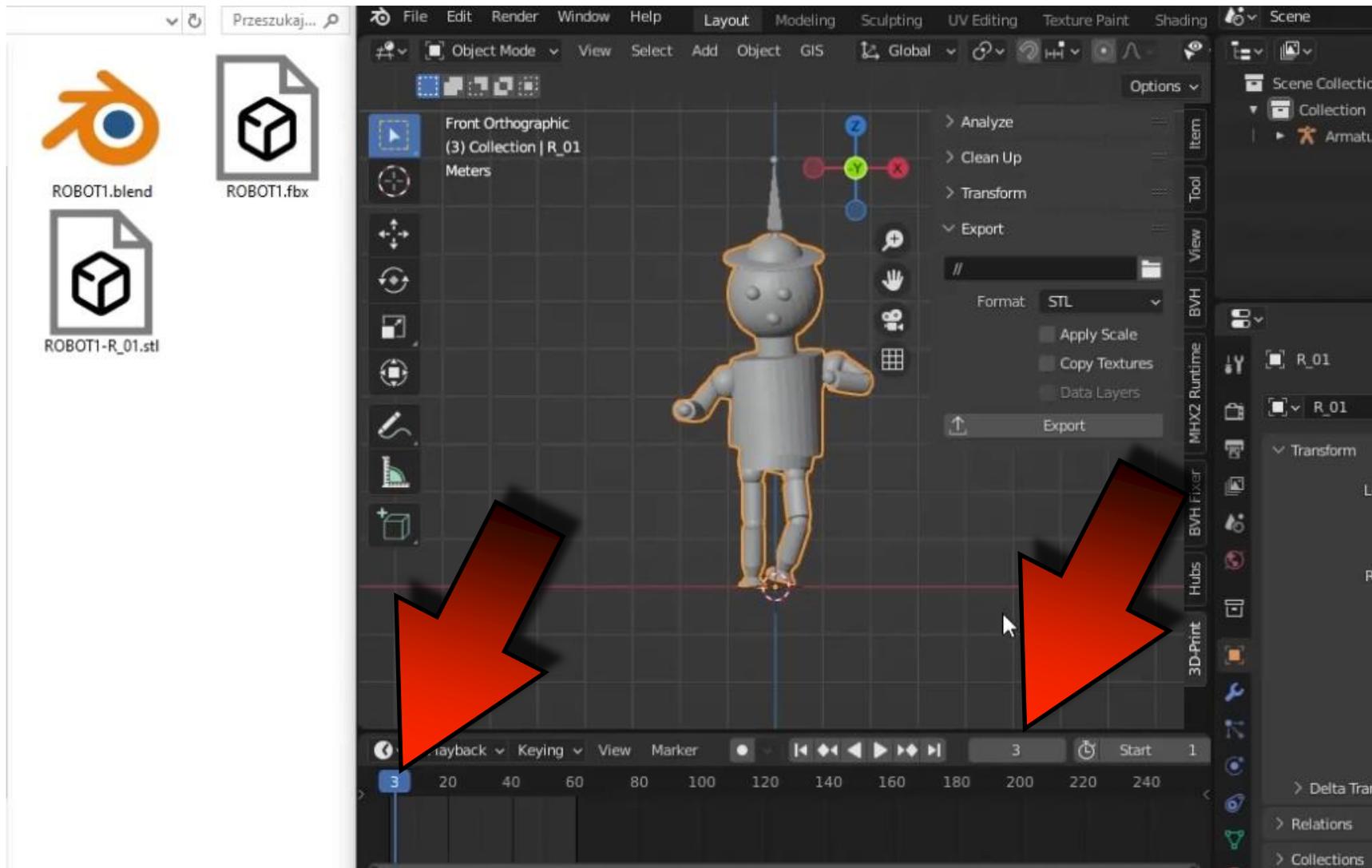
POWER OF AR AND VR

**A FILE WITH ADDED MODEL NAME
WILL BE CREATED **R_01****



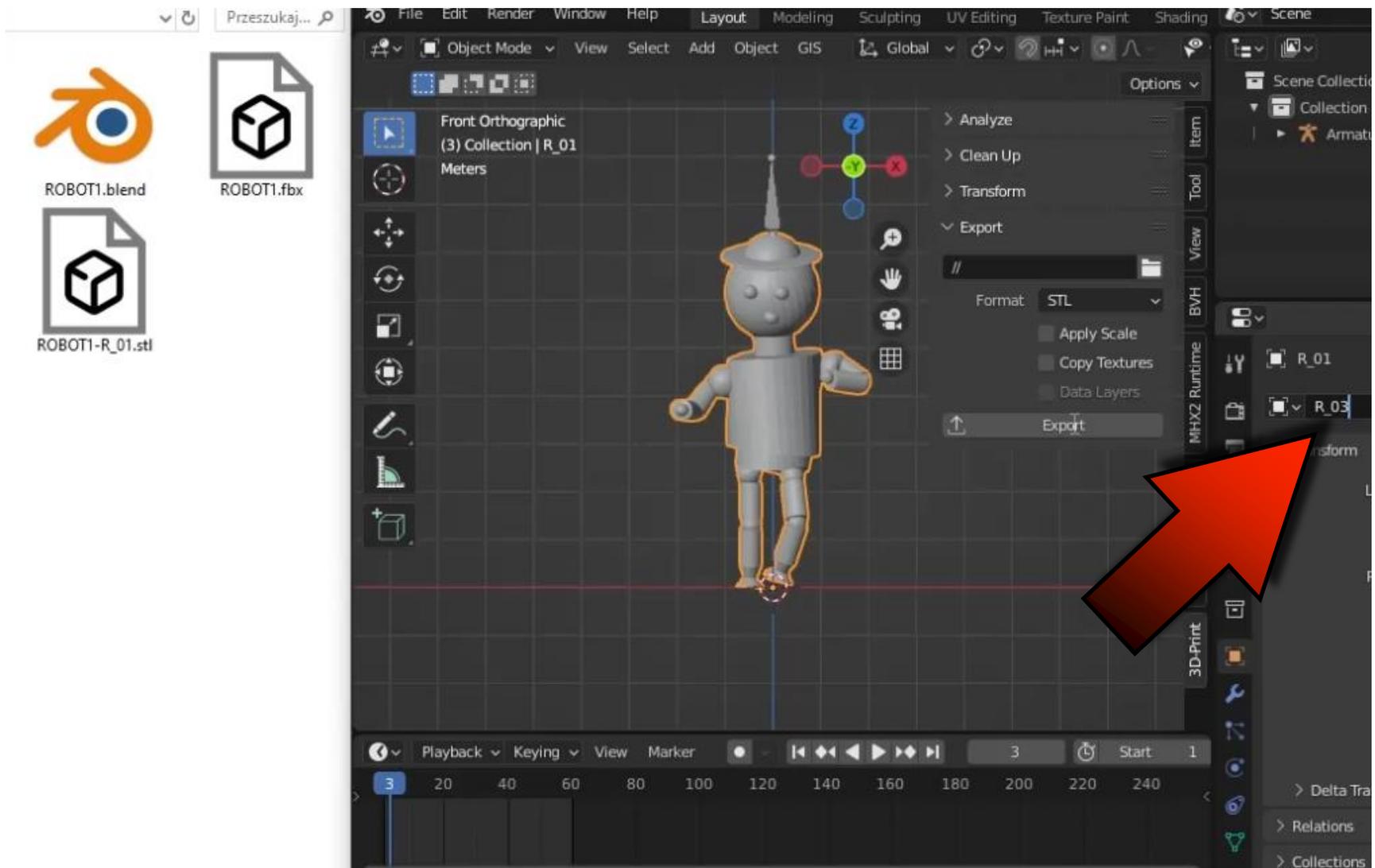
ZOETROPE

GO TO FRAME 3

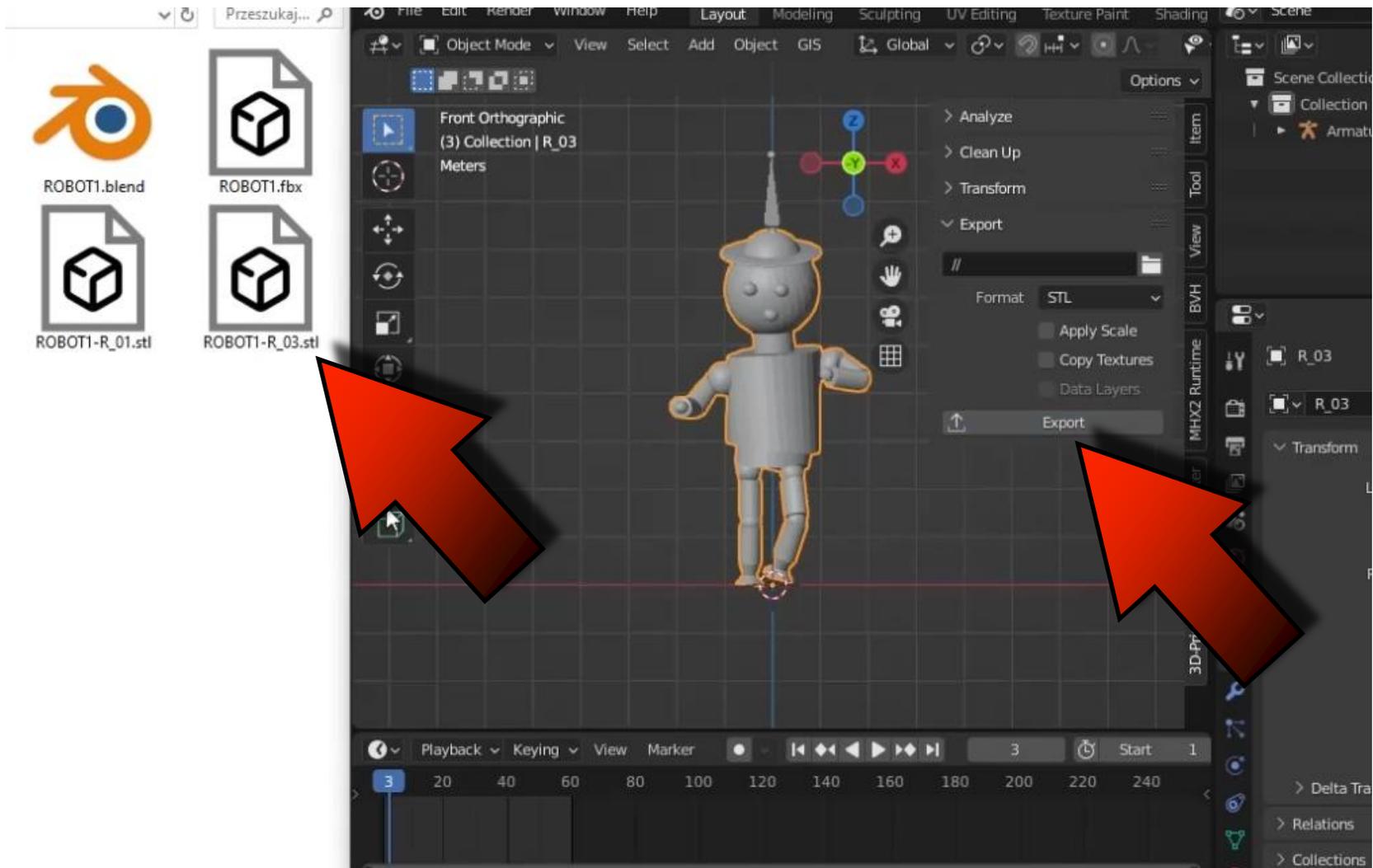


ZOETROPE

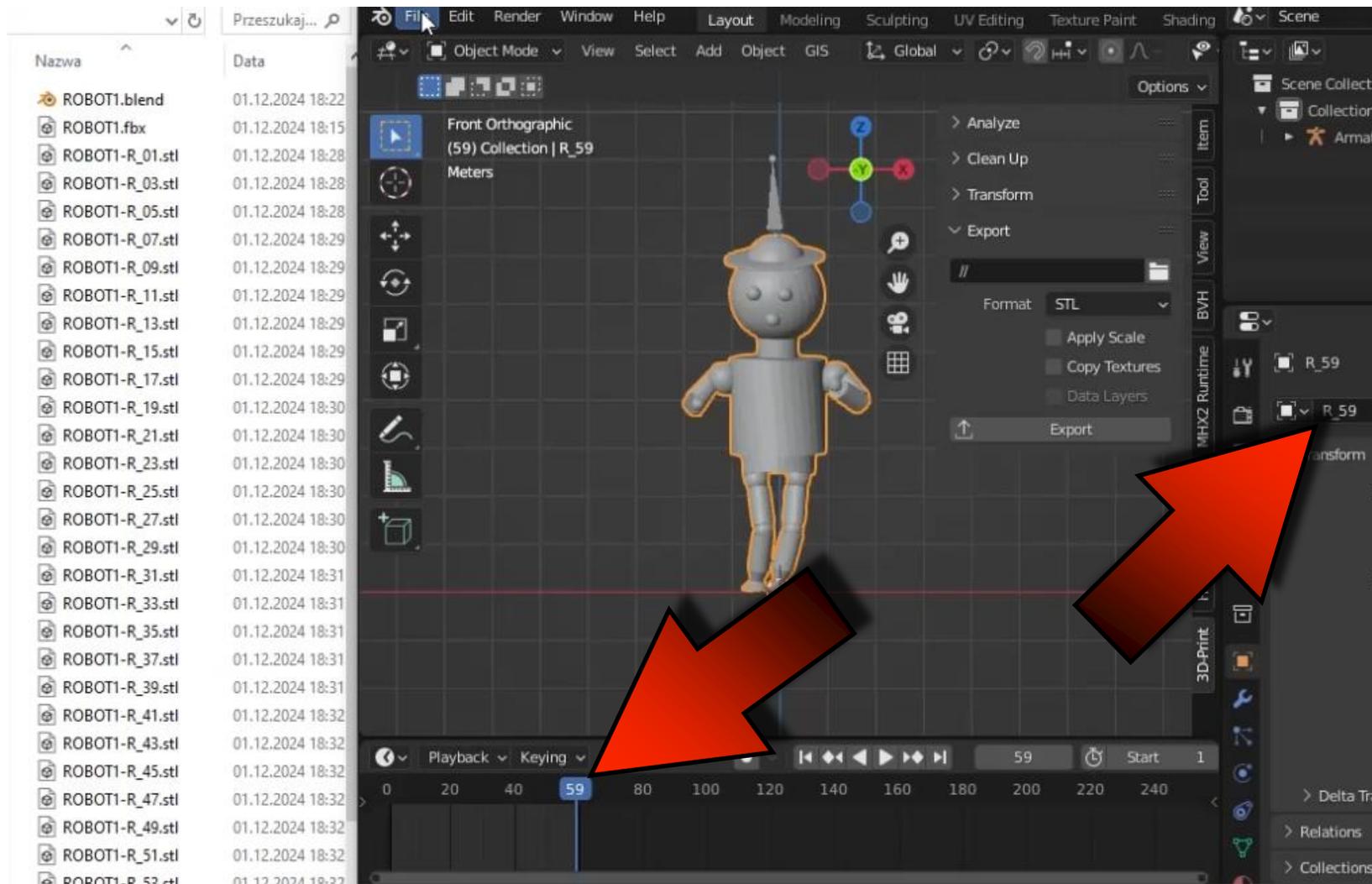
CHANGE MODEL NAME TO **R_03**



CLICK ON **EKSPORT**
A FILE WITH ADDED MODEL NAME **R_03 WILL BE CREATED**

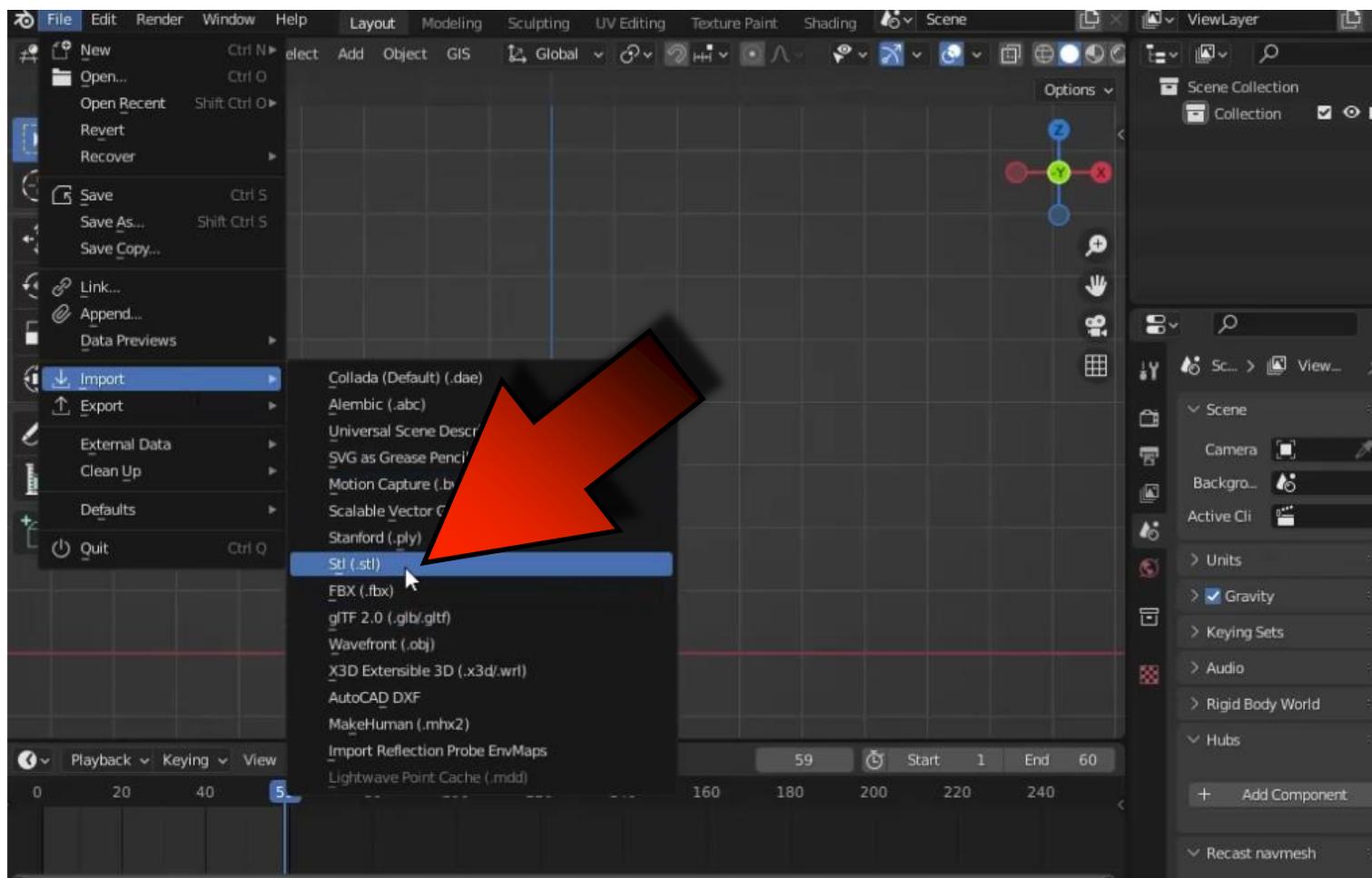


PROCEED LIKE THIS UNTIL FRAME 59
SKIPPING EVERY TWO FRAMES



ZOETROPE

OPEN A NEW FILE AND IMPORT **ALL STL FILES**

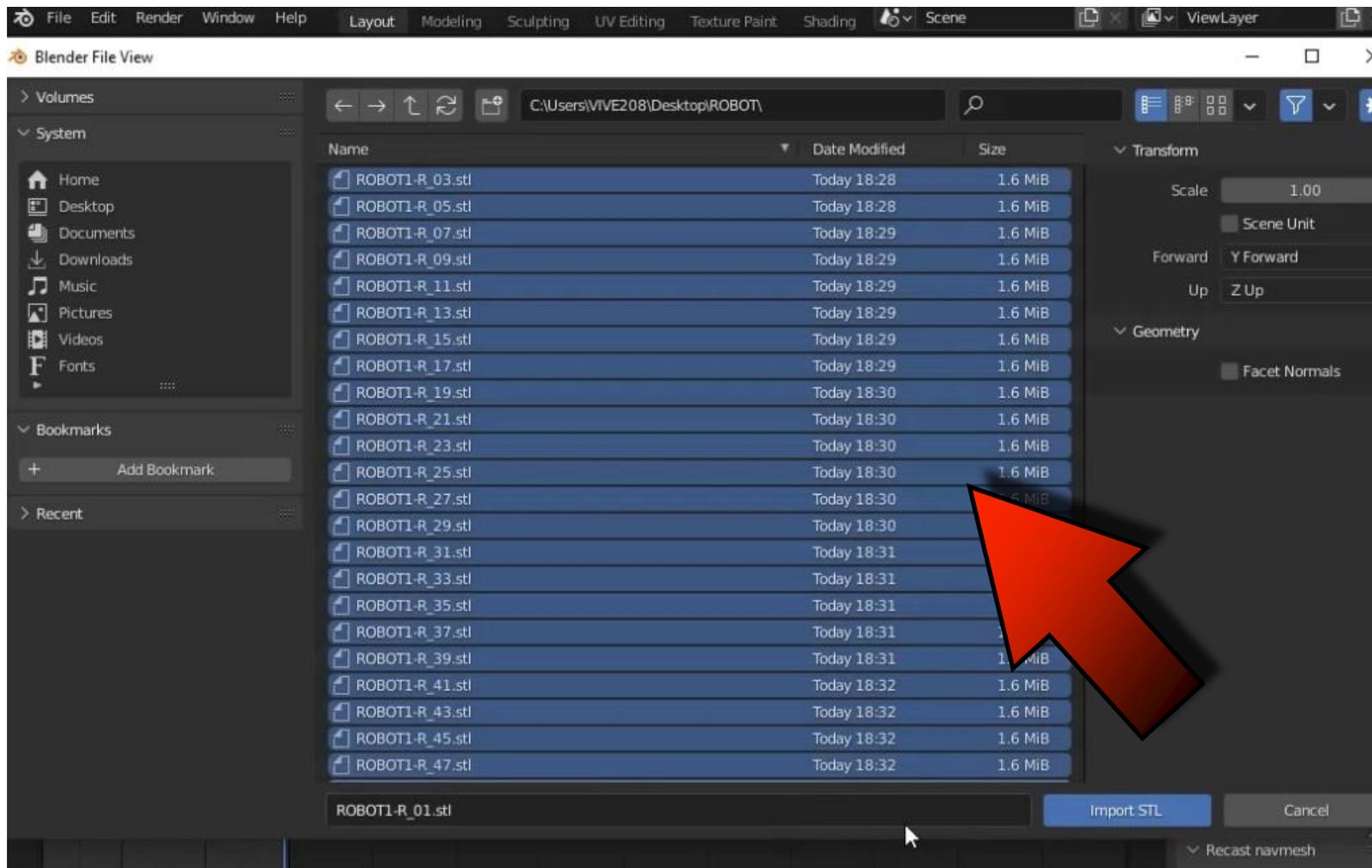




POWER OF AR AND VR



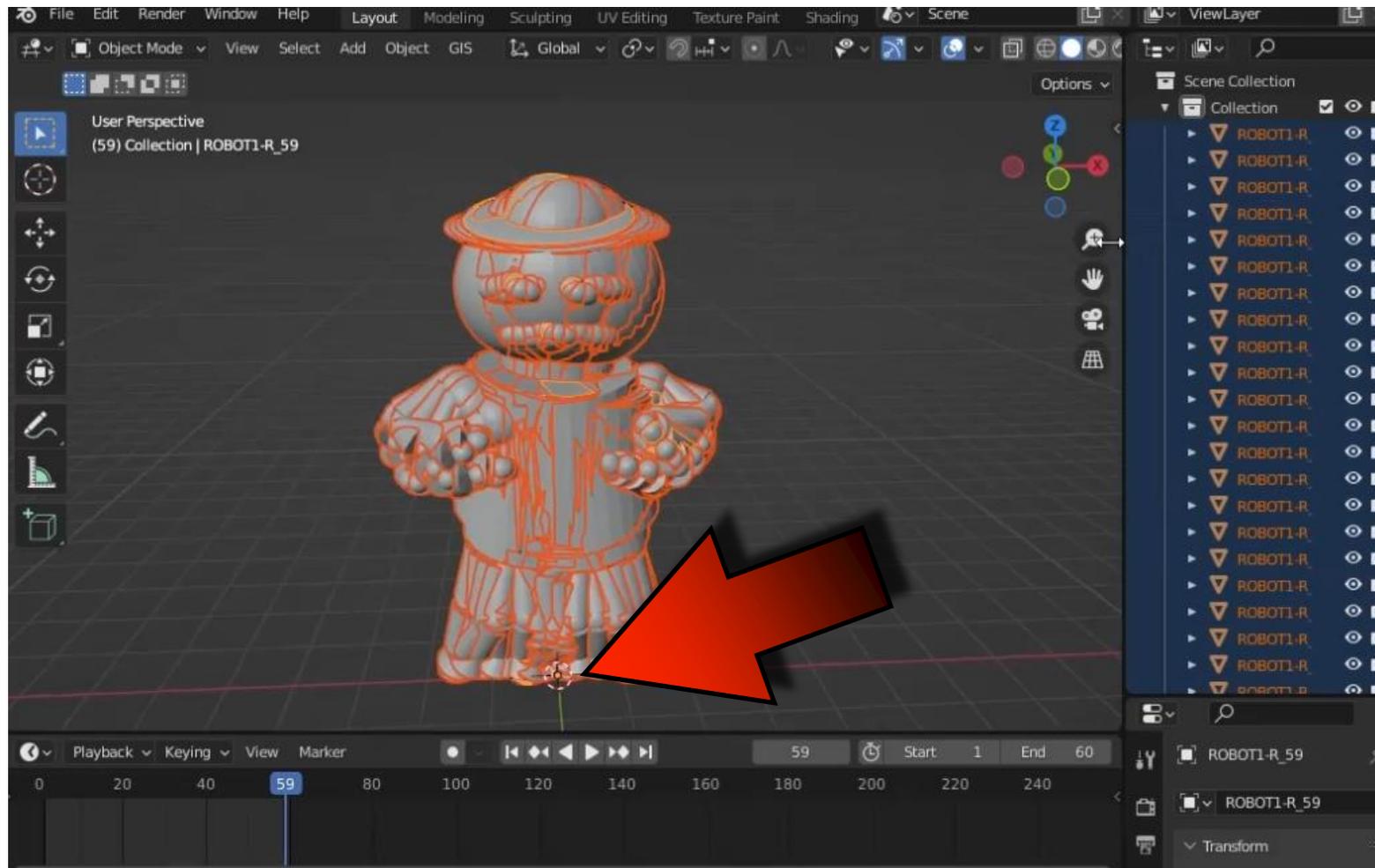
YOU CAN DO IT IN ONE TIME



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POWER OF AR AND VR

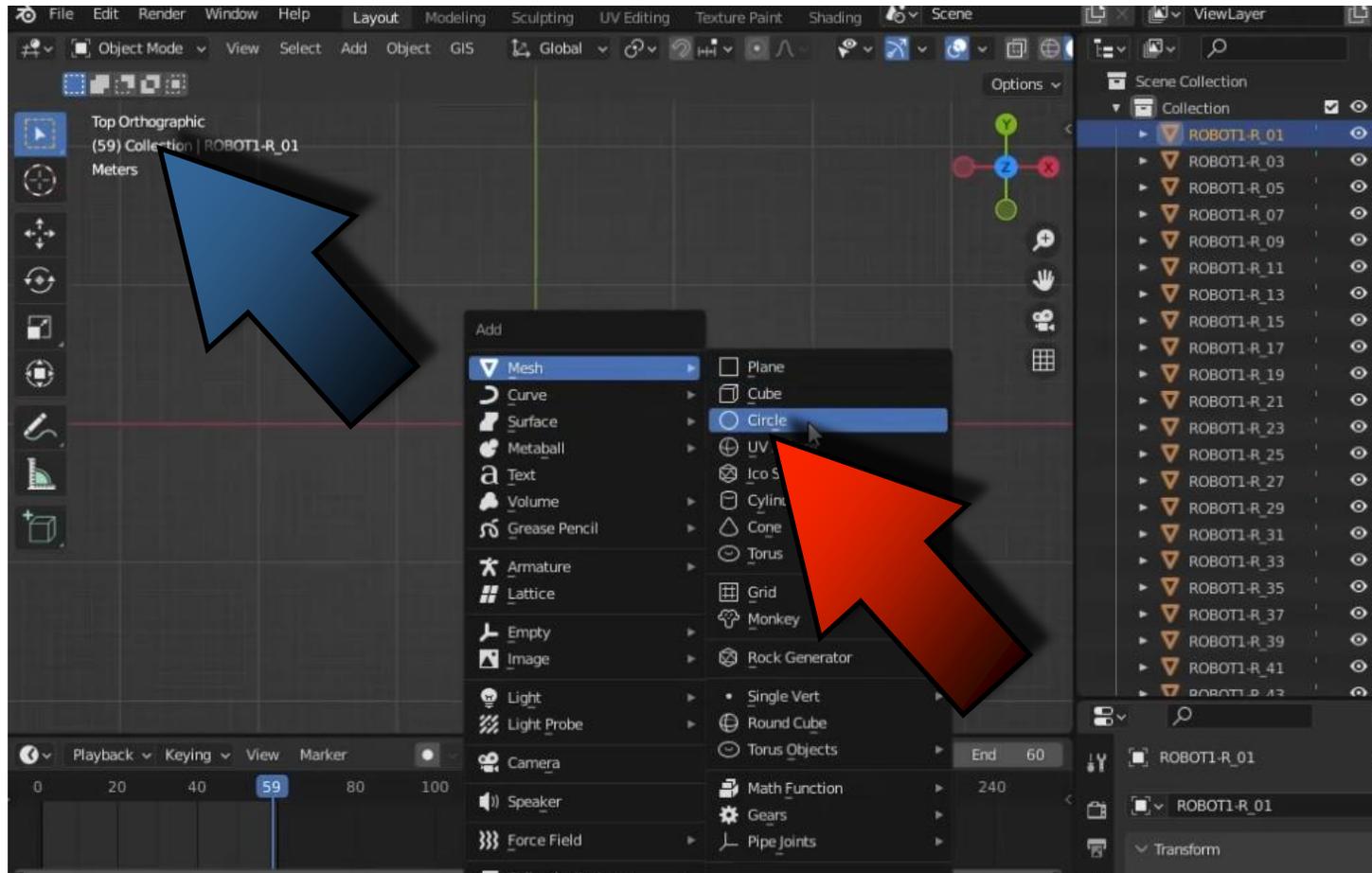
YOU WILL SEE THIS VIEW
ALL MODELS WILL BE IN ONE PLACE



ZOETROPE

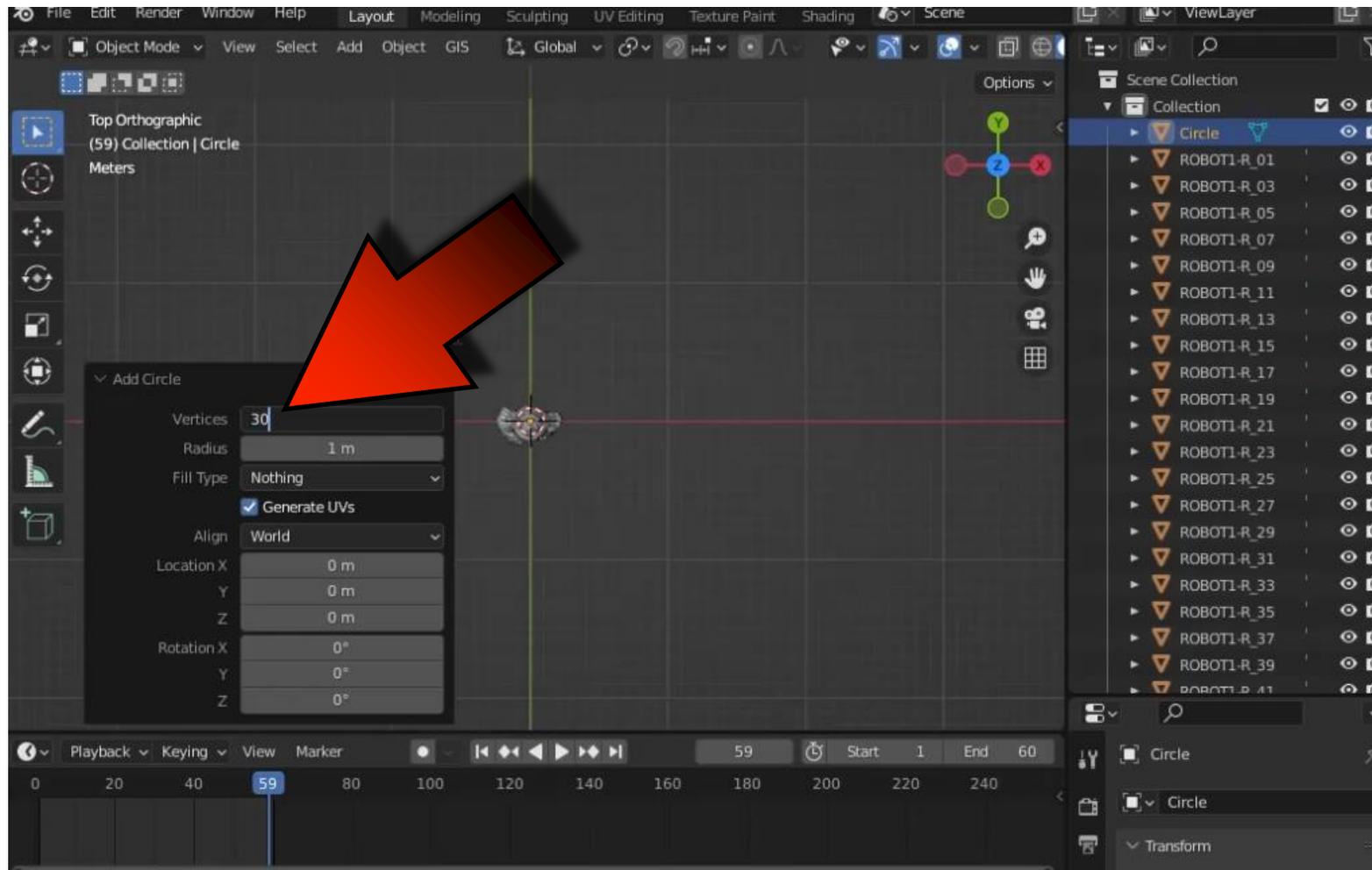
POWER OF AR AND VR

IN TOP ORTOGRAPHIC VIEW INSERT **CIRCLE**



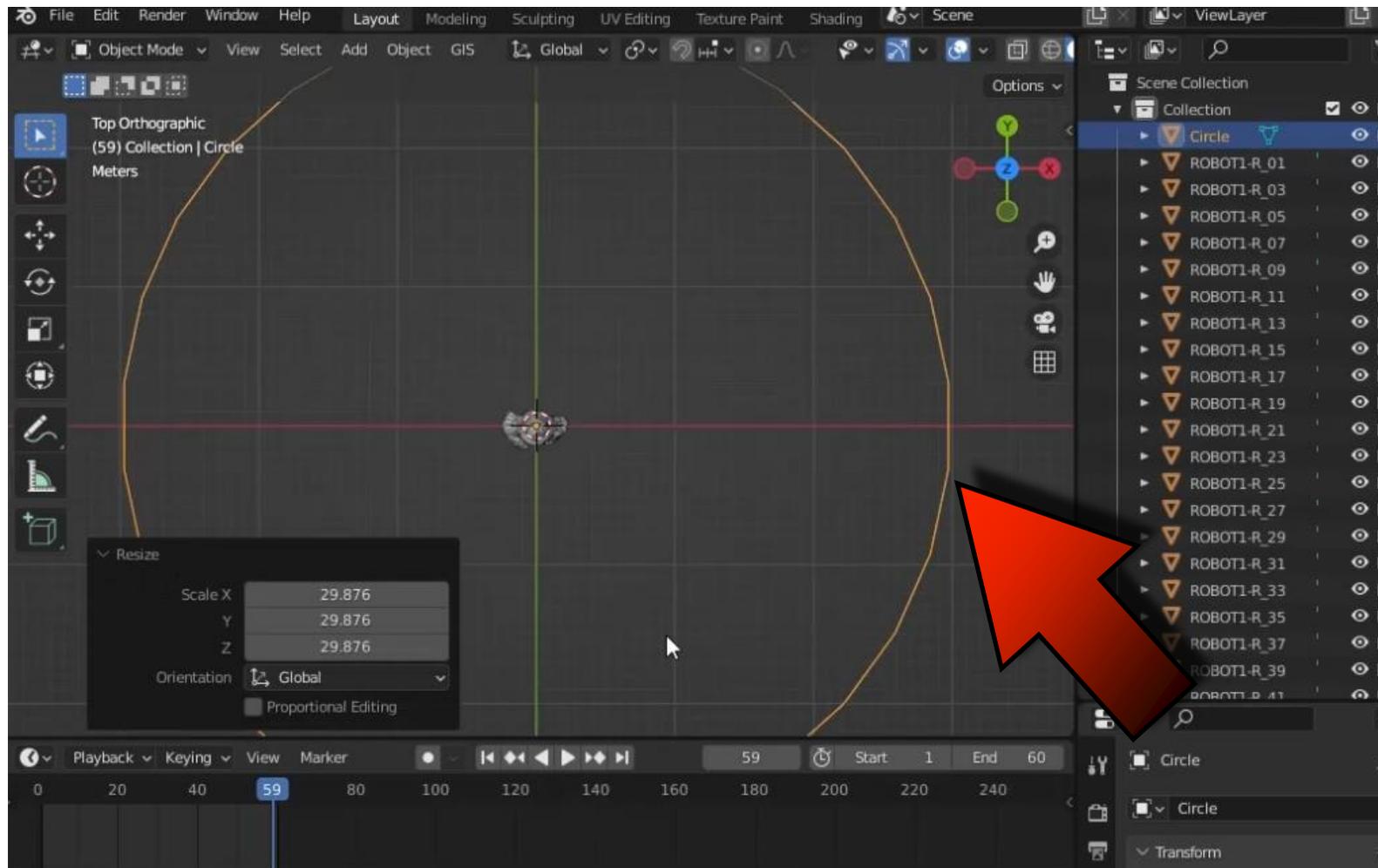
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CHANGE TO **30** VERTEX



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SCALE CIRCLE AS IN THE DRAWING



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POWER OF AR AND VR

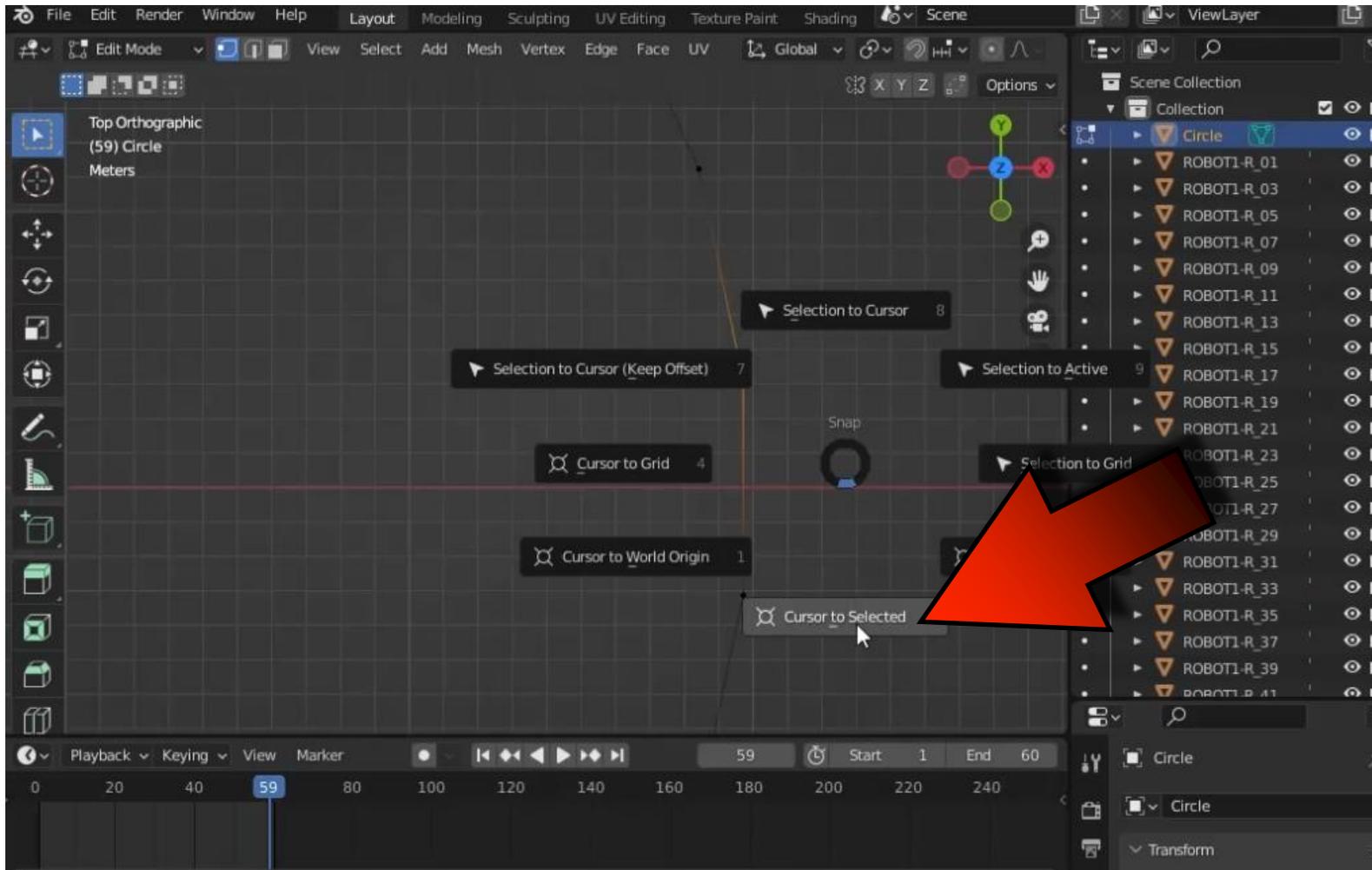
GO TO EDIT MODE
AND SELECT ONE VERTEX



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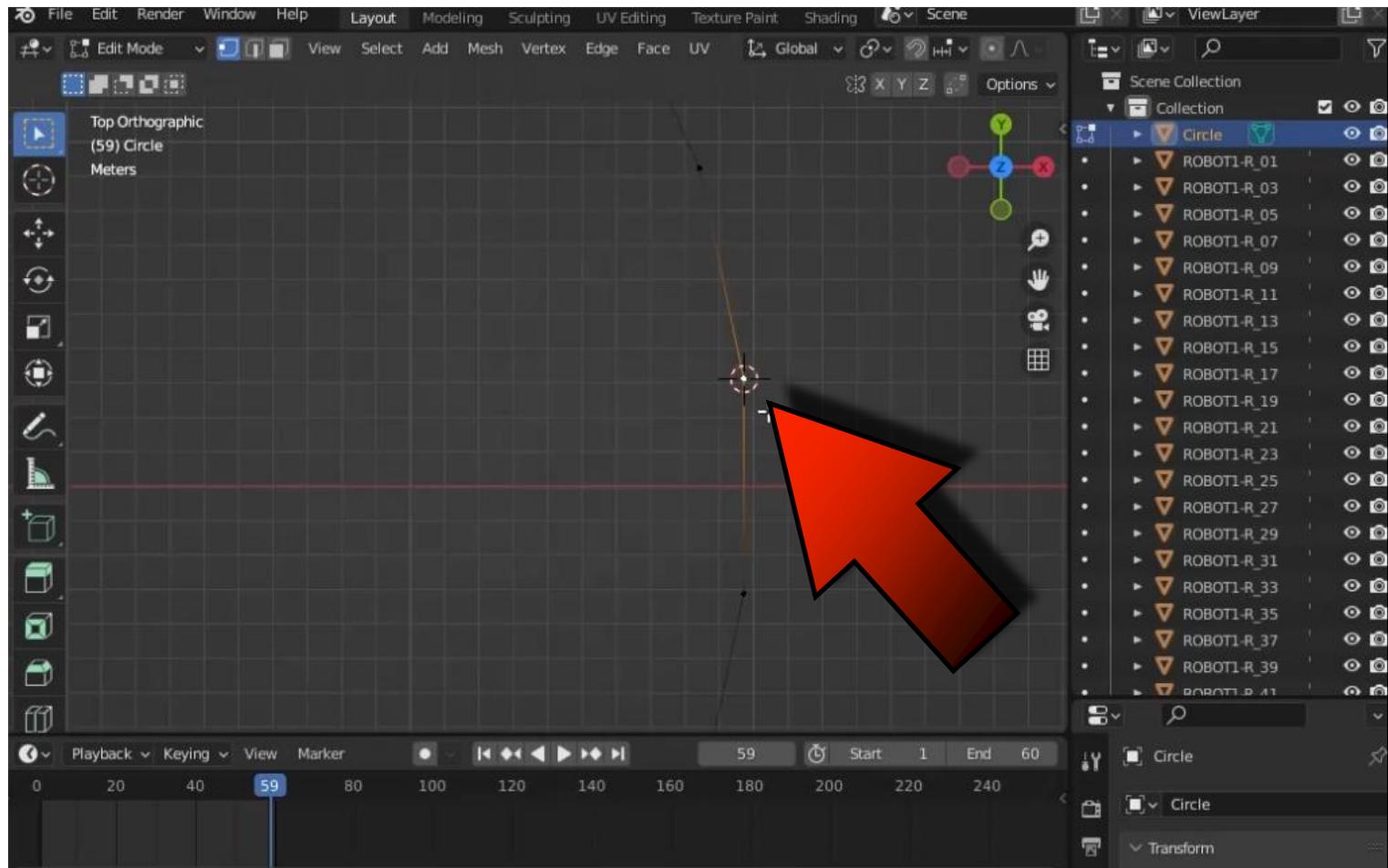
**PRESS SHIFT+S AND SELECT
CURSOR TO SELECTED**



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POWER OF AR AND VR

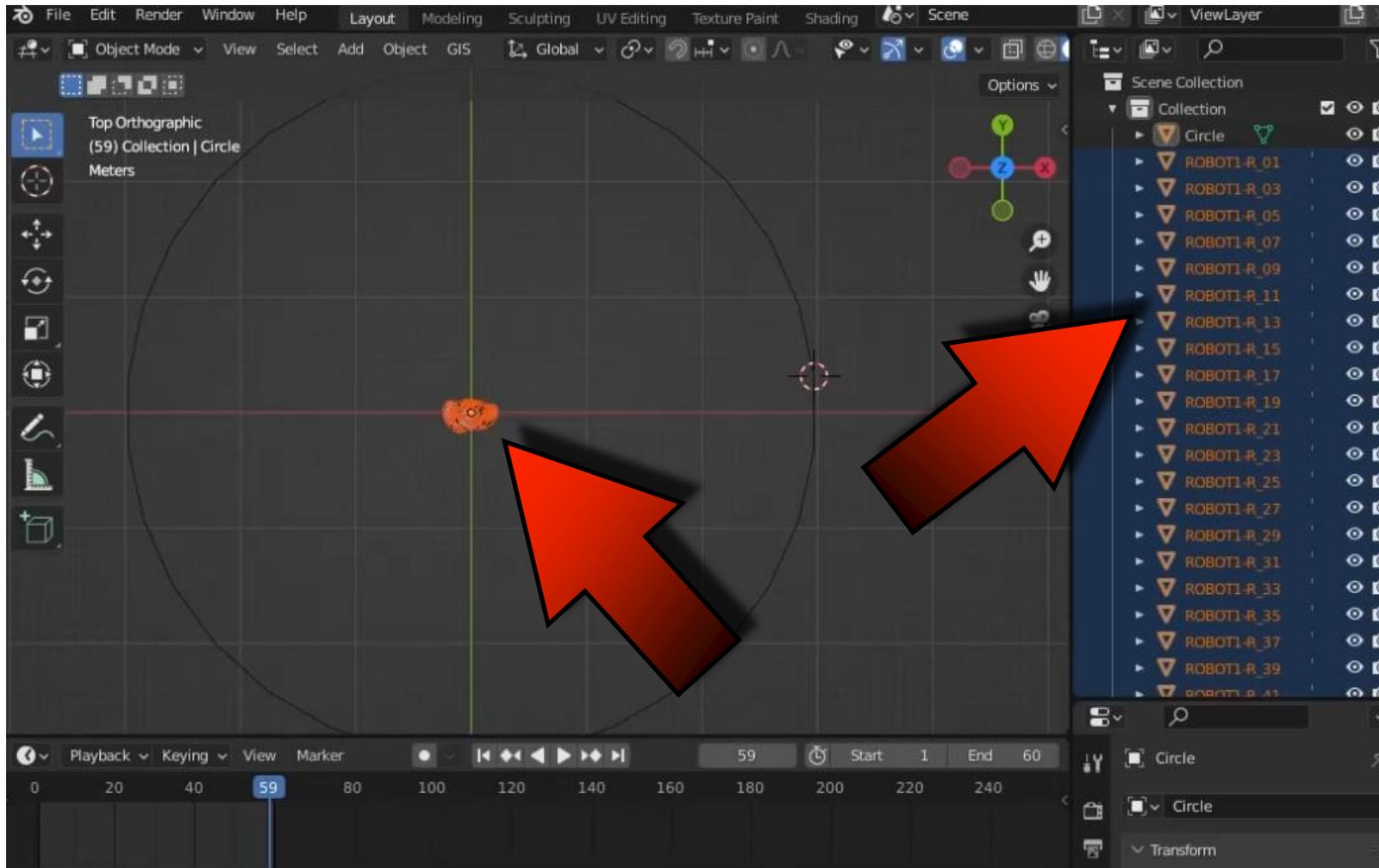
3D CURSOR JUMPS TO SELECTED VERTEX



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POWER OF AR AND VR

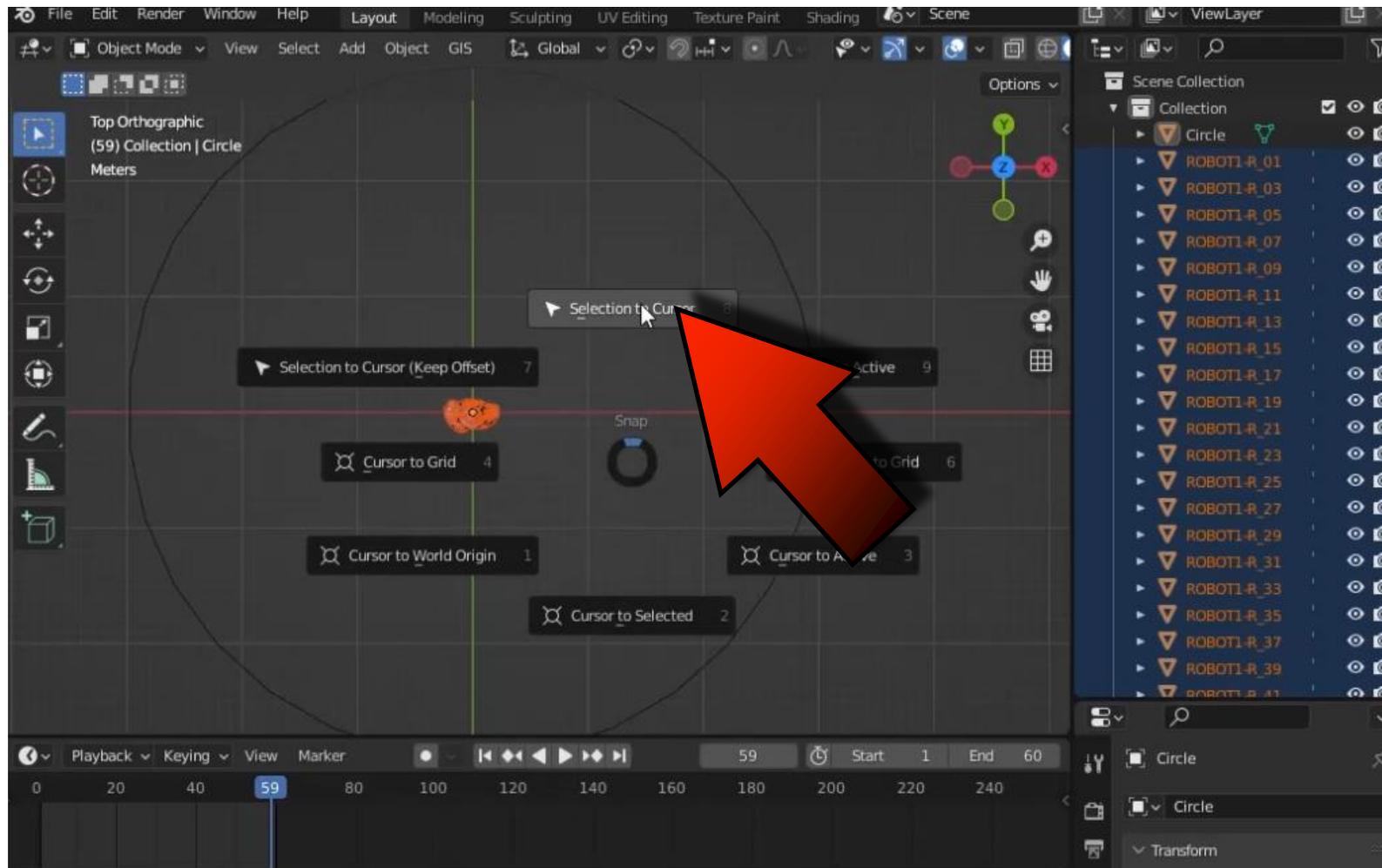
IN OBJECT MODE SELECT ALL IMPORTED MODELS



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POWER OF AR AND VR

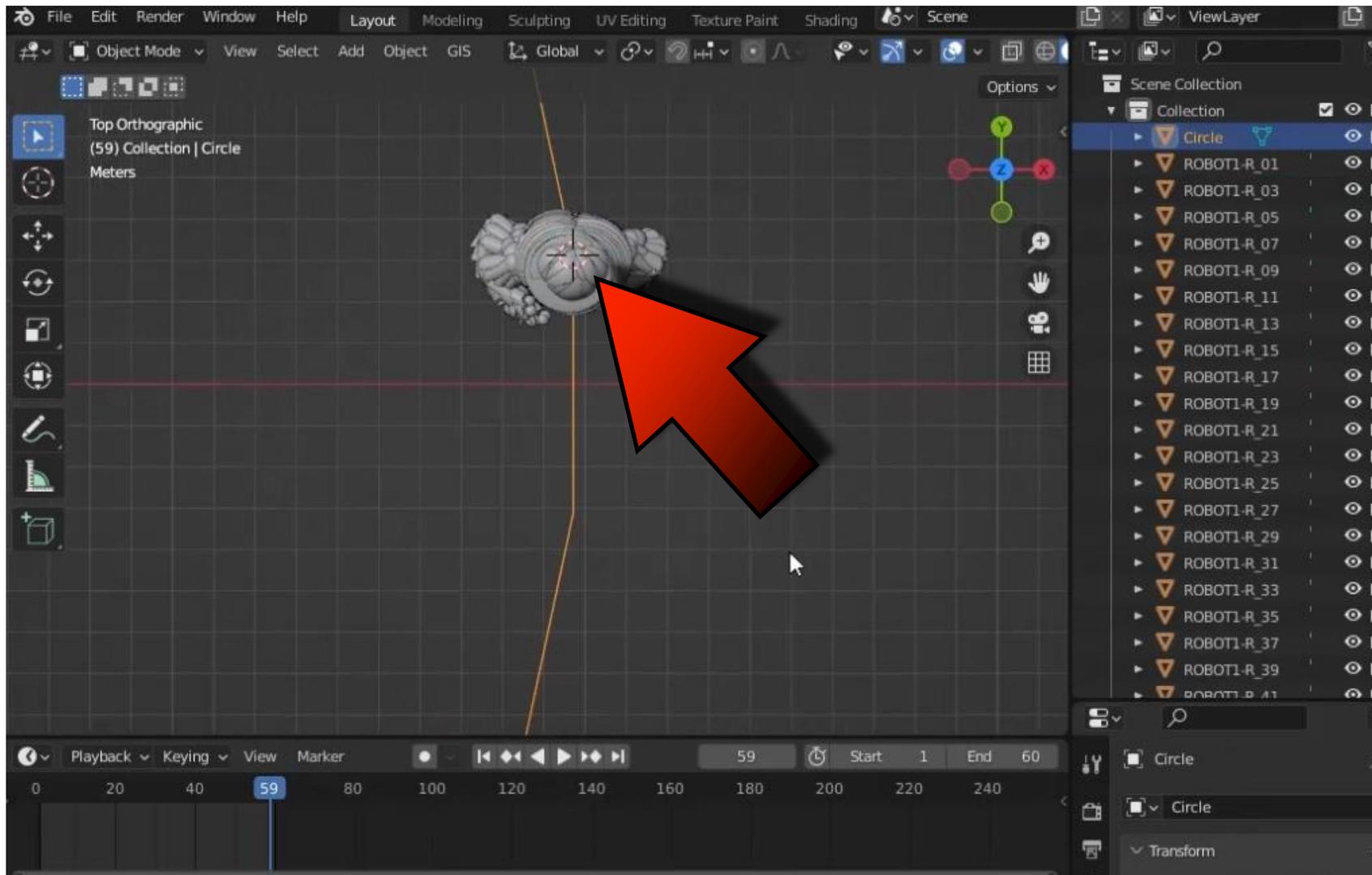
CLICK **SHIFT+S** AND SELECT **SELECTION TO CURSOR**



ZOETROPE

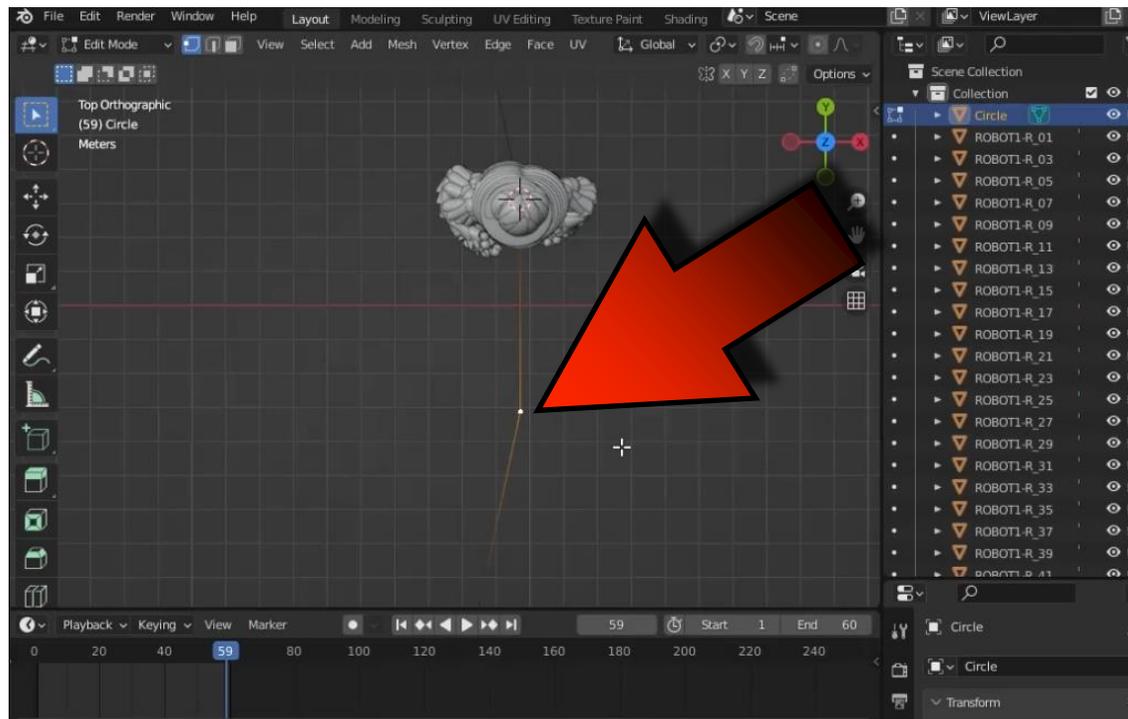
POWER OF AR AND VR

ALL MODELS WILL JUMP TO 3D CURSOR



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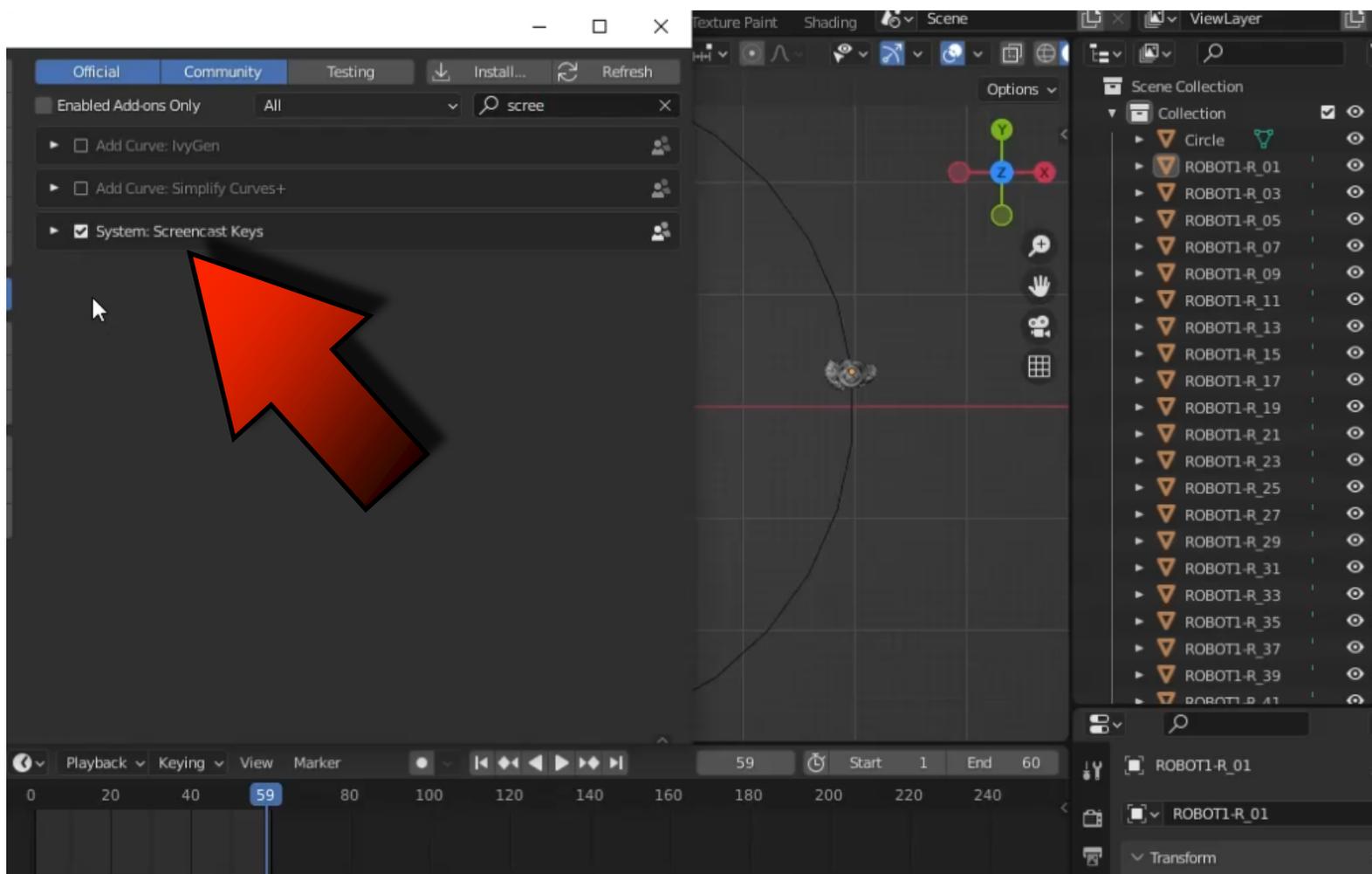
**THIS IS HOW YOU CAN DISTRIBUTE
SINGLE MODELS TO INDIVIDUAL VERTEXES
HOWEVER, THIS IS A QUITE LABOR-INTENSIVE
METHOD IN WHICH IT IS EASY
TO MAKE A MISTAKE**



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POWER OF AR AND VR

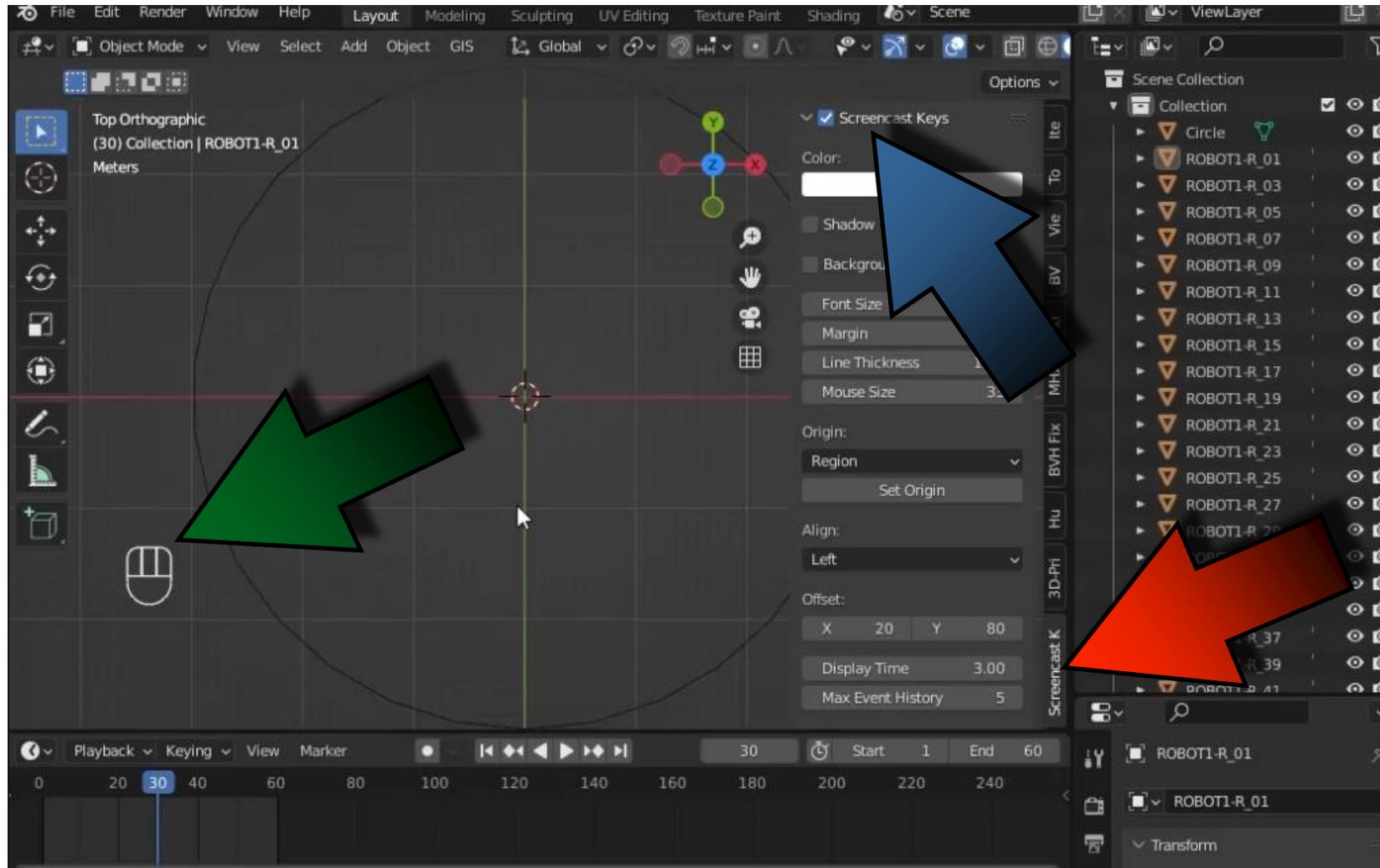
**IF YOU WANT OTHERS TO SEE WHAT KEYS
YOU ARE PRESSING, YOU CAN INSTALL
THE APPROPRIATE PLUG-IN**



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POWER OF AR AND VR

IT WILL BE IN THE **SAME WINDOW**
AS OUR PREVIOUS ADD-ONS

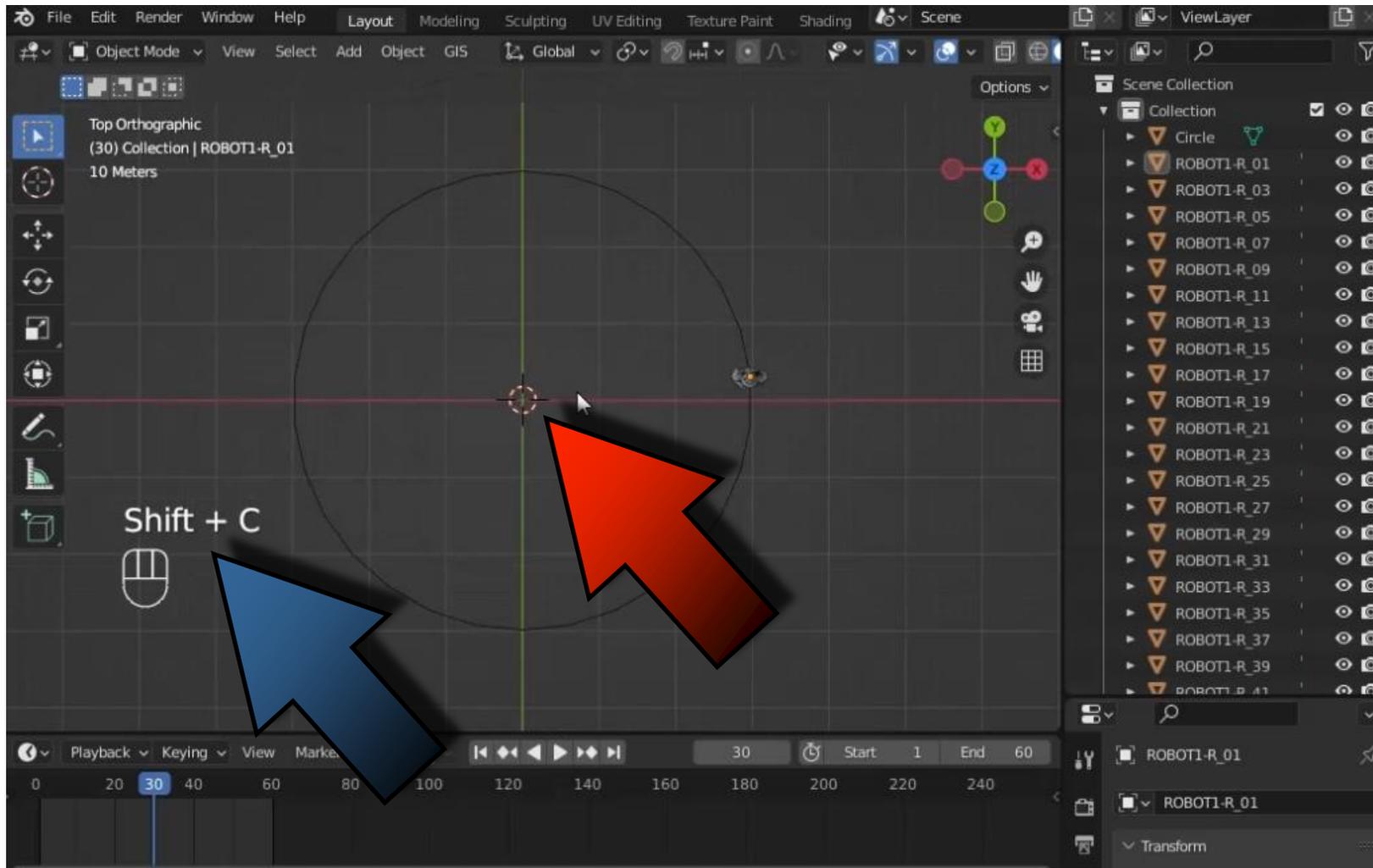


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**IN LATER TRAININGS,
SOME CLASSES WILL BE
IMPLEMENTED AS TUTORIALS
ON YOUTUBE
WHERE WE WILL USE
THIS ADDITION**

POWER OF AR AND VR

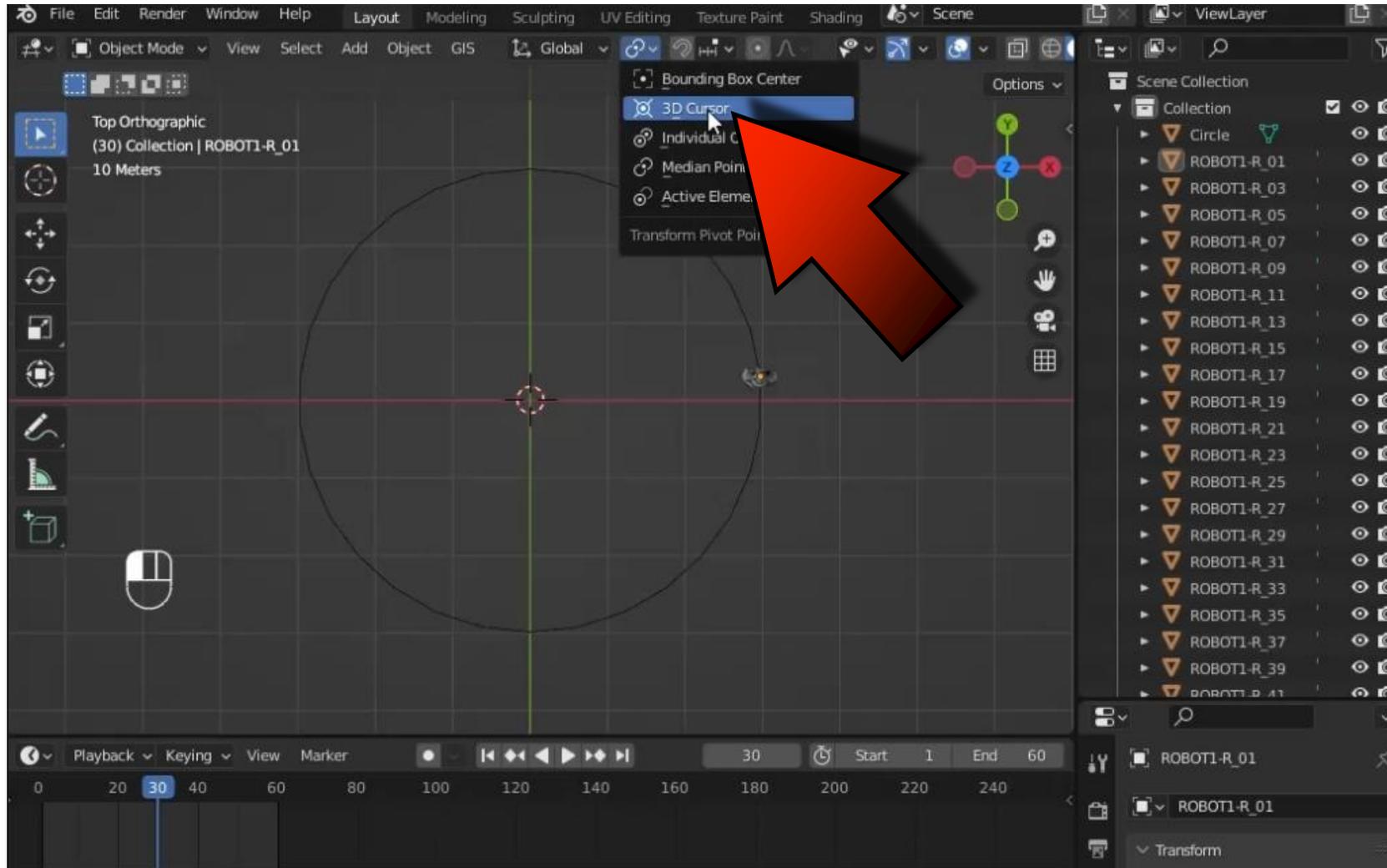
MOVE THE CURSOR TO THE CENTER OF THE COORDINATE SYSTEM



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SELECT TRANSFORMATIONS AROUND THE **3D CURSOR**



ZOETROPE

FOR THESE EXERCISES WE USE APPROPRIATE TABLES

	A	B	C	D	E	F
1	360 STOPNI			ANIMACJA		
2				CO KTÓRĄ KLATKE		
3	STL	OBRÓT	2	3	4	5
4	15	24	30	45	60	75
5	18	20	36	54	72	90
6	20	18	40	60	80	100
7	24	15	48	72	96	120
8	30	12	60	90	120	150
9	36	10	72	108	144	180

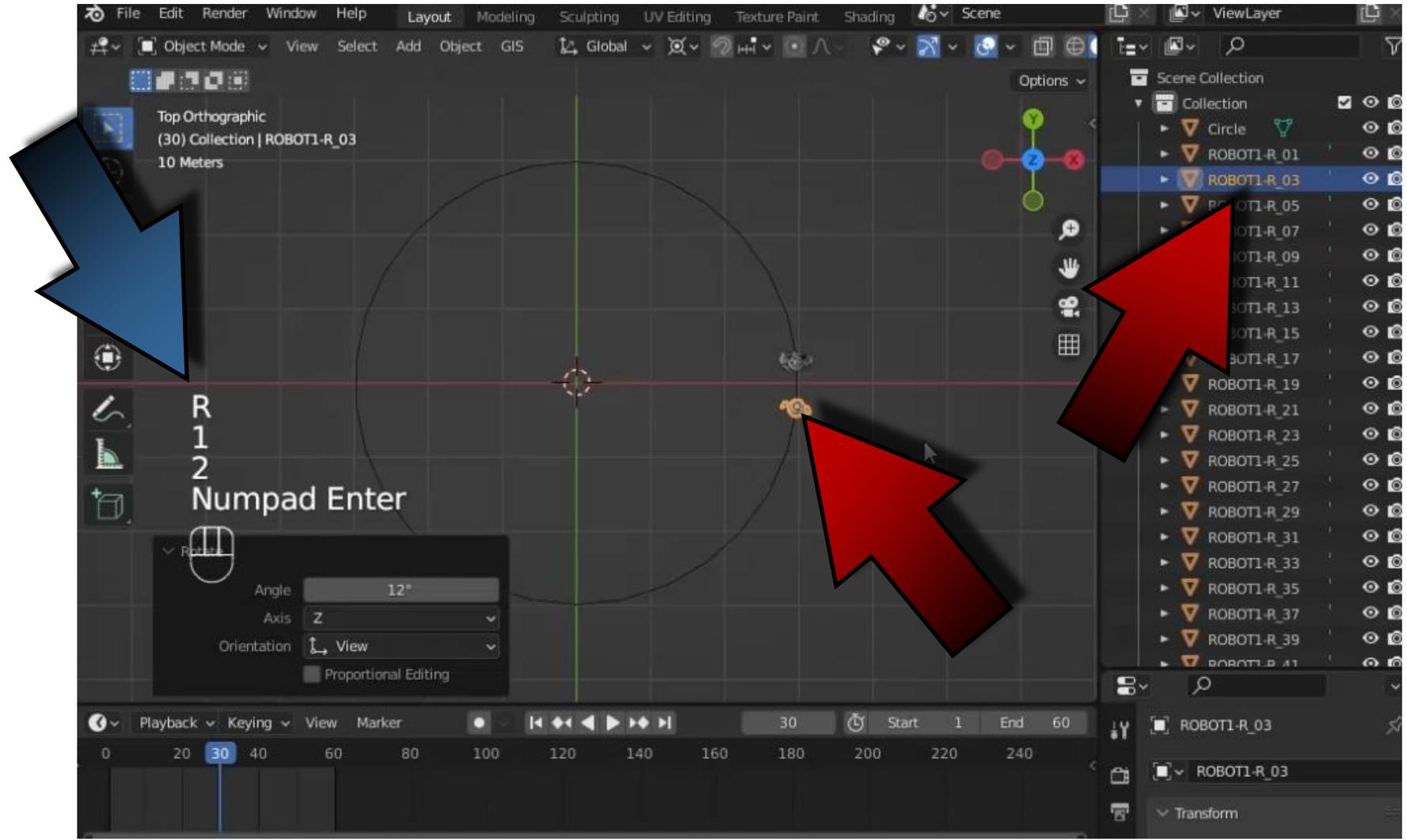
POWER OF AR AND VR

IN OUR CASE WE HAVE 30 FILES SO WE WILL MOVE THE MODELS EVERY 12 DEGREES

	A	B	C	D	E	F
1	360 STOPNI			ANIMACJA		
2				CO KTÓRĄ KLATKE		
3	STL	OBRÓT	2	3	4	5
4	15	24	30	45	60	75
5	18	20	36	54	72	90
6	20	18	40	60	80	100
7	24	15	48	72	96	120
8	30	12	60	90	120	150
9	36	10	72	108	144	180

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FOR **R_03** PERFORM THE FOLLOWING ROTATION



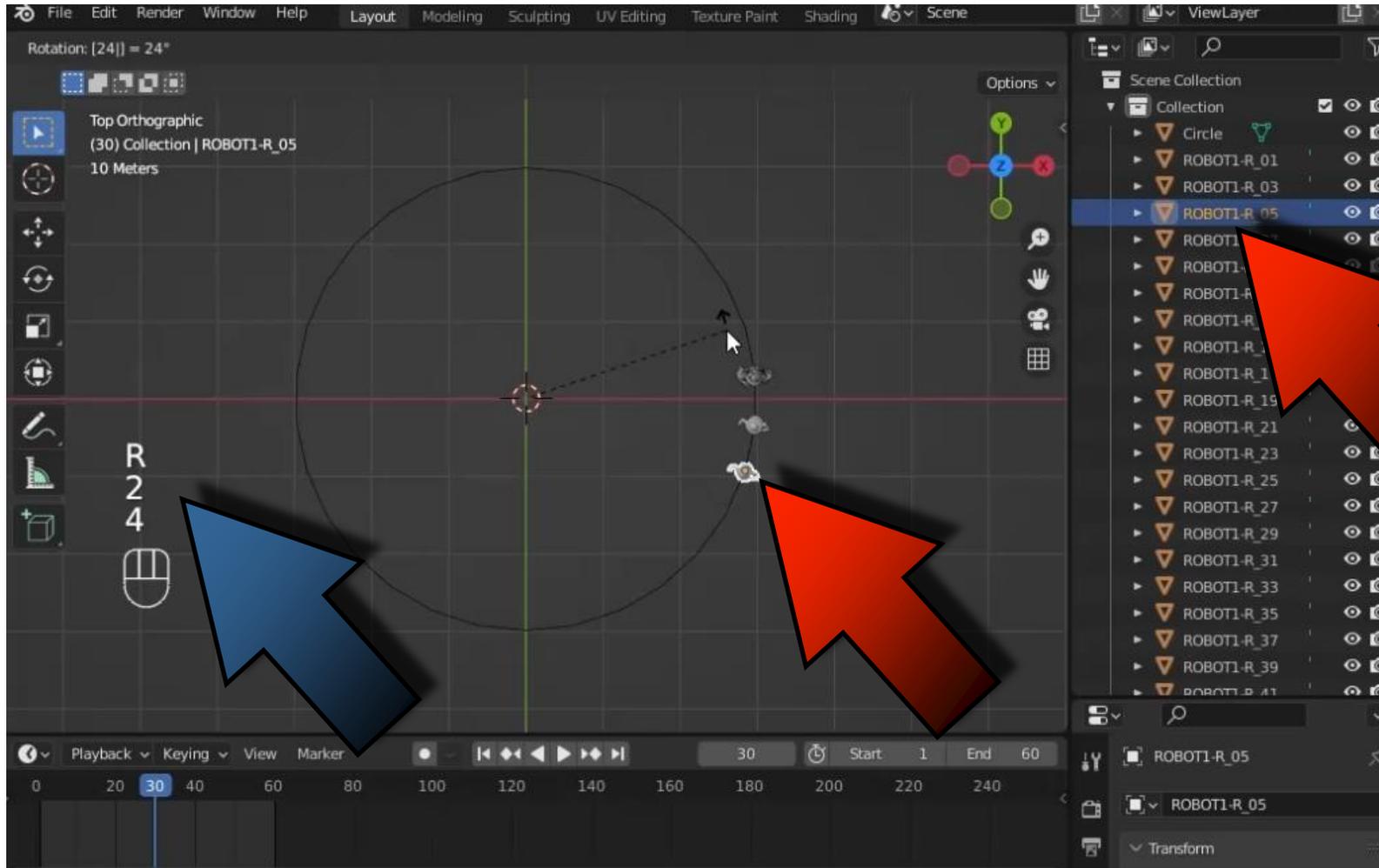
ZOETROPE



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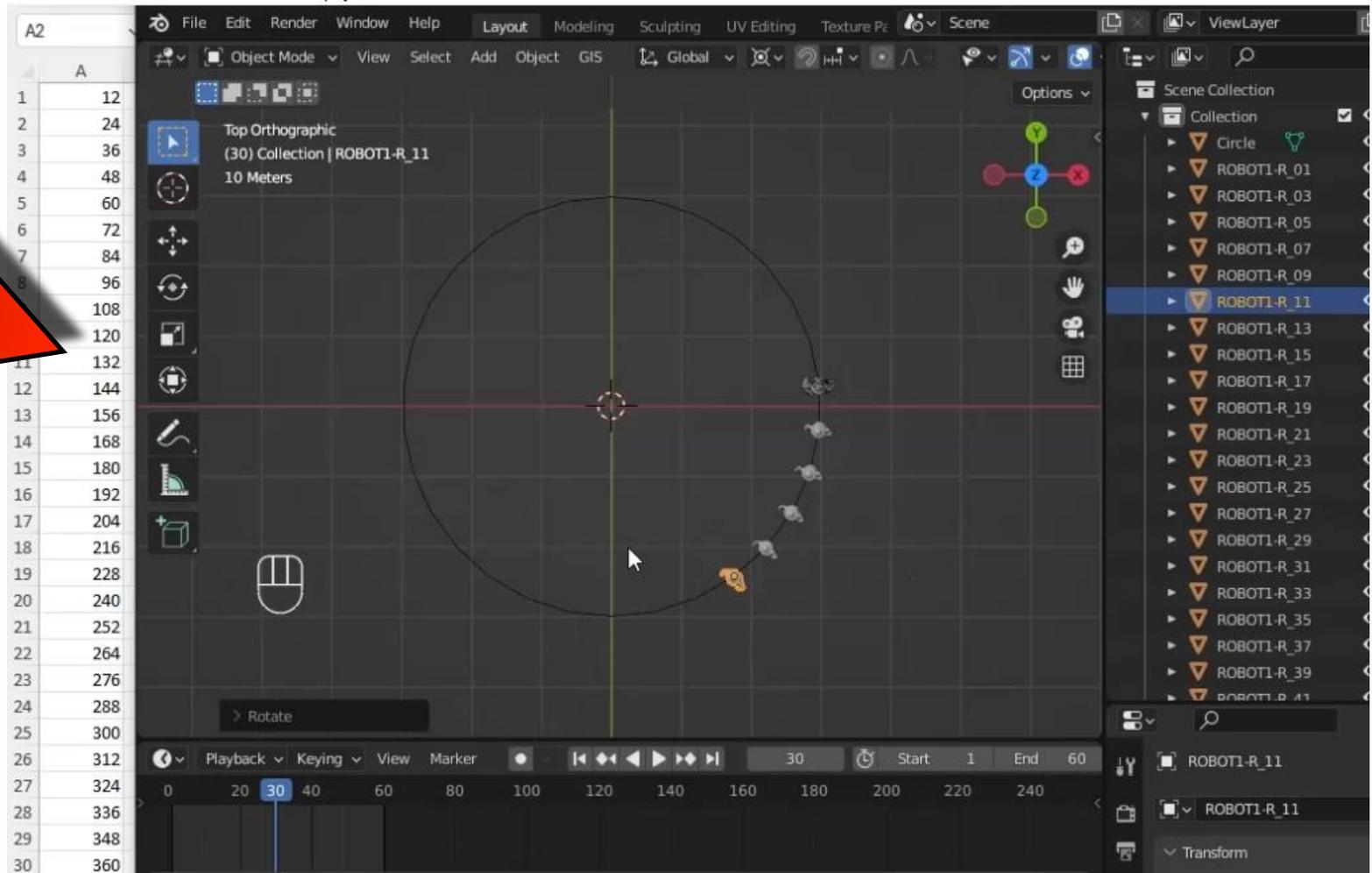


THEN FOR R_05



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**IN ORDER NOT TO MAKE A MISTAKE, WE OFTEN
USE A SPREADSHEET BY ENTERING
A SIMPLE FORMULA**



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DO THIS UNTIL R_59

The image displays a Blender 2.80 interface for creating a zoetrope. On the left, a spreadsheet lists a sequence of numbers: 12, 24, 36, 48, 60, 72, 84, 96, 108, 120, 132, 144, 156, 168, 180, 192, 204, 216, 228, 240, 252, 264, 276, 288, 300, 312, 324, 336, 348. The Blender interface shows a top orthographic view of a circular arrangement of 59 robots, labeled 'ROBOT1-R_59'. A red arrow points to one robot in the circle, and another red arrow points to the 'ROBOT1-R_59' entry in the Outliner panel on the right. Two blue arrows point to the robot collection and the spreadsheet.

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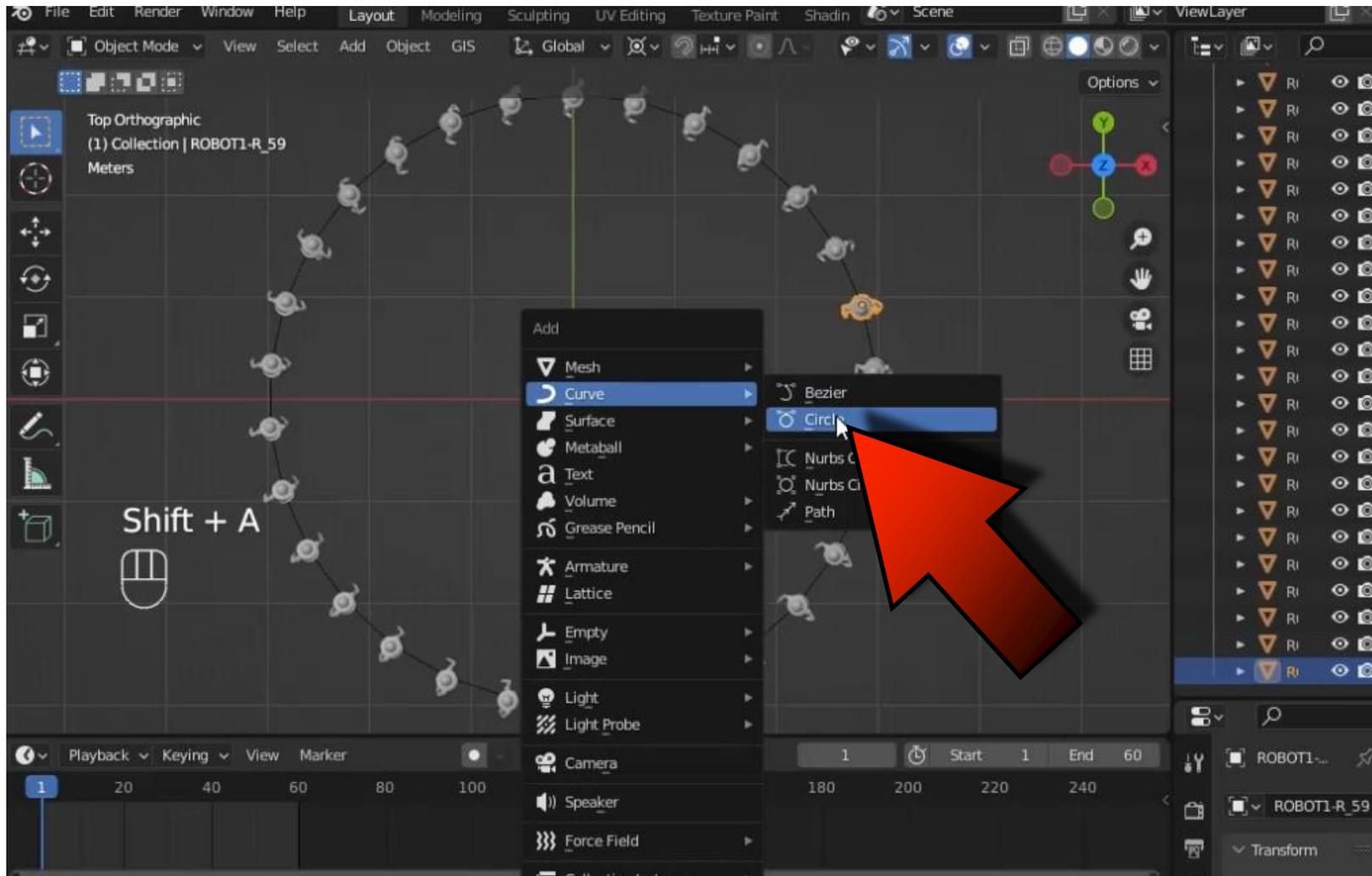
THIS IS WHAT THE CORRECTLY SET MODELS WILL LOOK LIKE



ZOETROPE

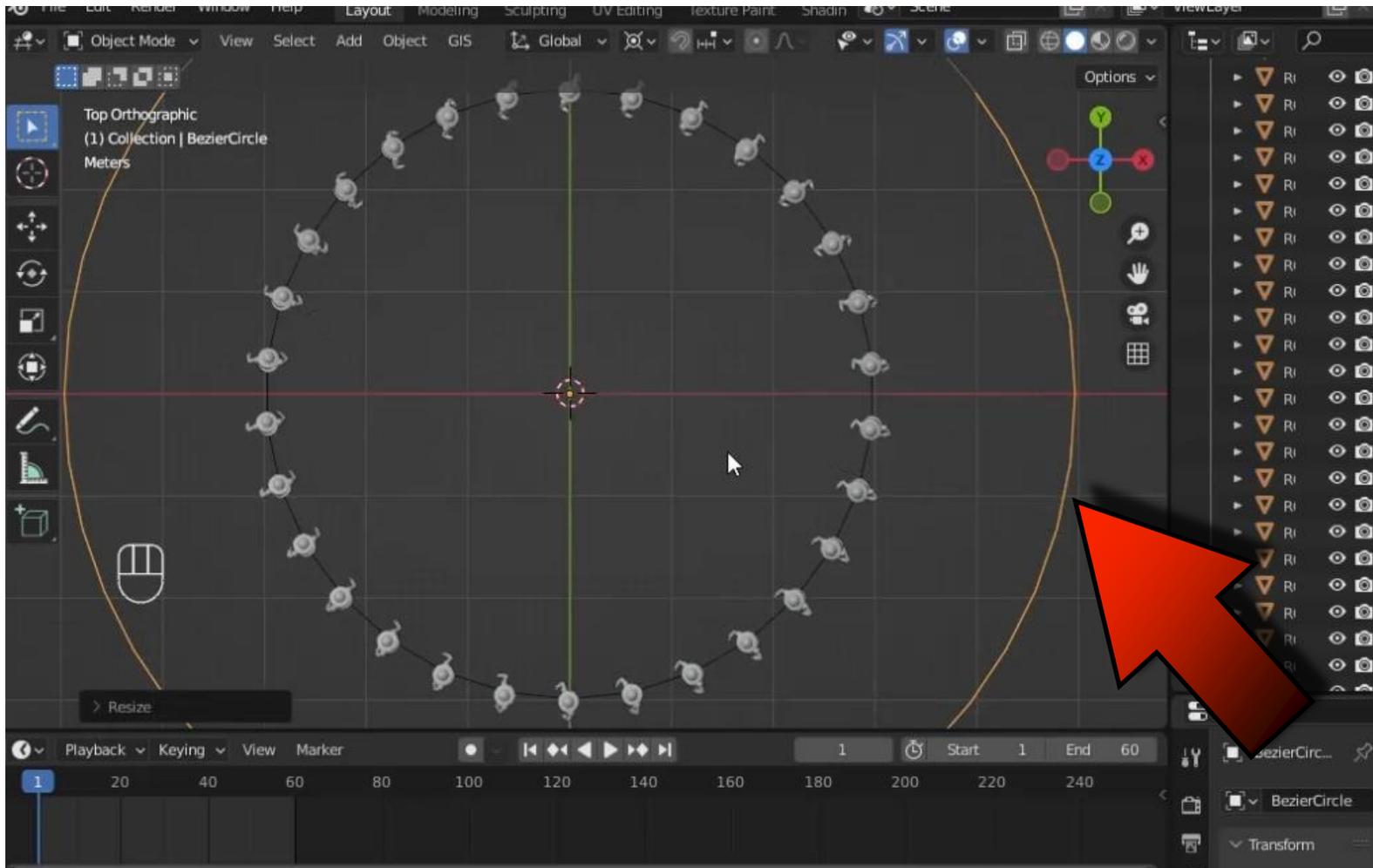
POWER OF AR AND VR

IN TOP ORTOGRAPHIC VIEW INSERT CIRCLE CURVE



ZOETROPE

SCALE AS IN THE DRAWING



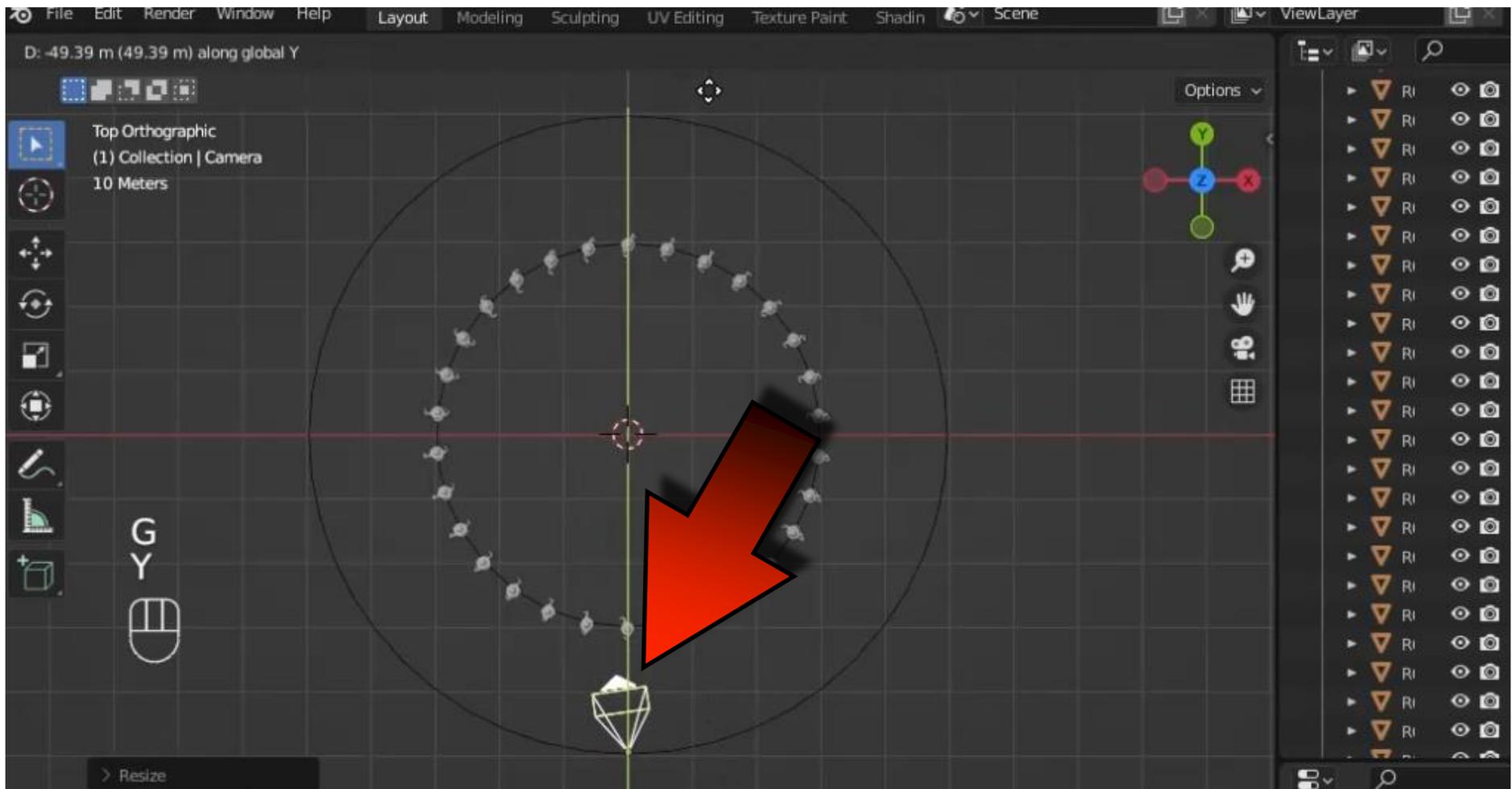
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PLACE ABOVE MODELS



ZOETROPE

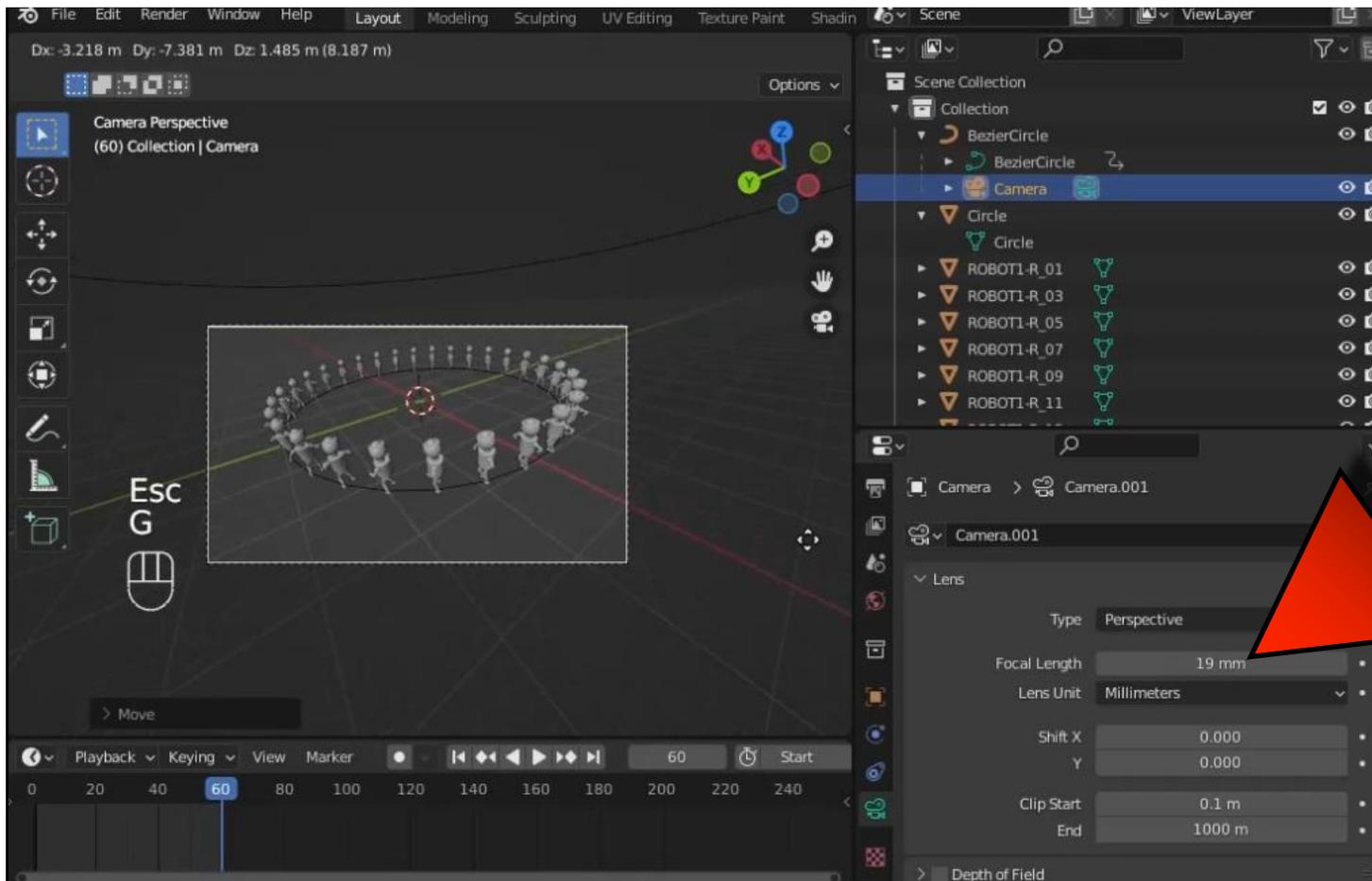
SET THE CAMERA AS IN THE DRAWING



ZOETROPE

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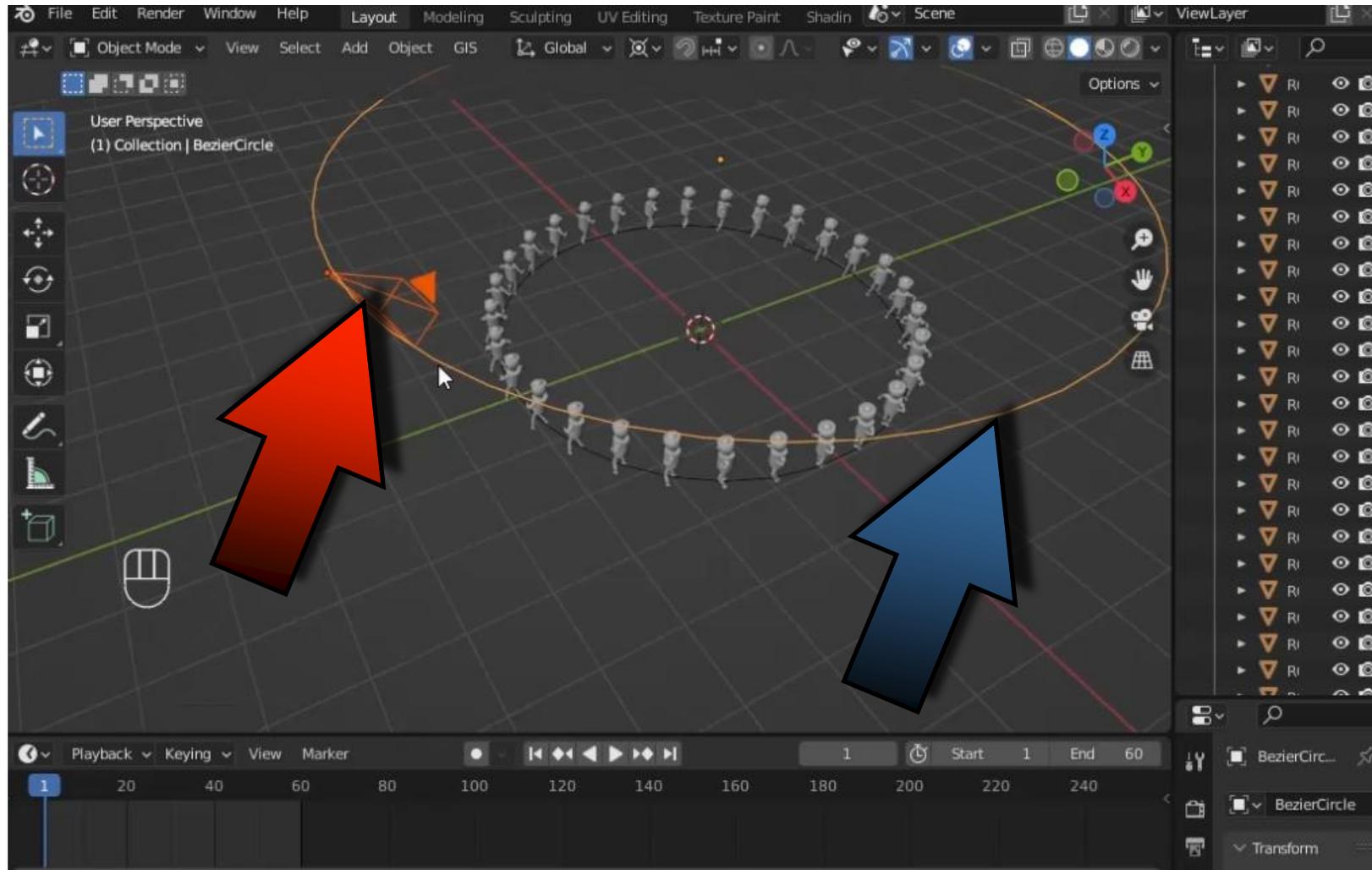
SET CORRECT CAMERA VIEW YOU CAN ALSO CHANGE THE PARAMETER **FOCAL LENGTH**



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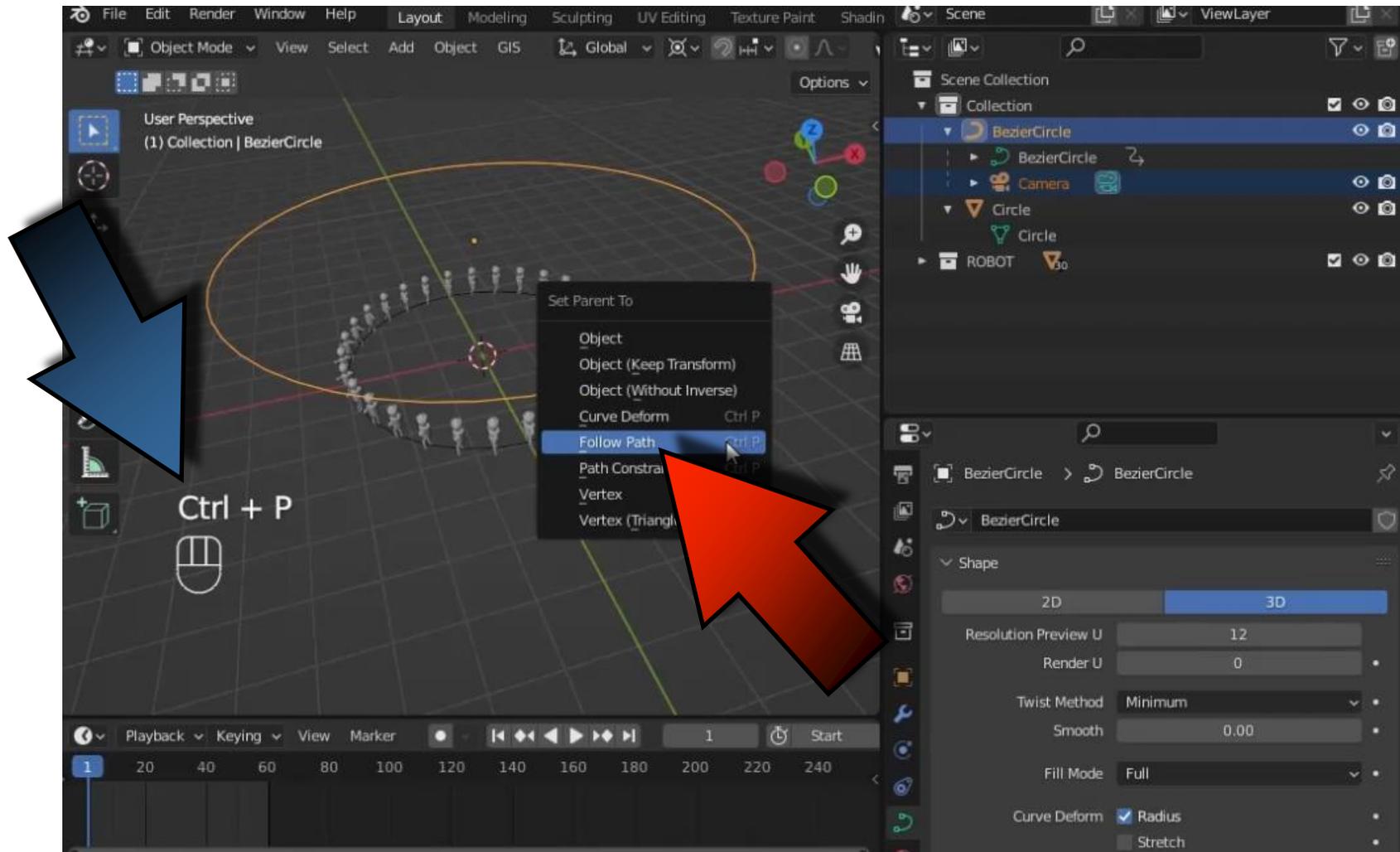
**SELECT CAMERA AND WITH SHIFT KEY
THEN SELECT CURVE**



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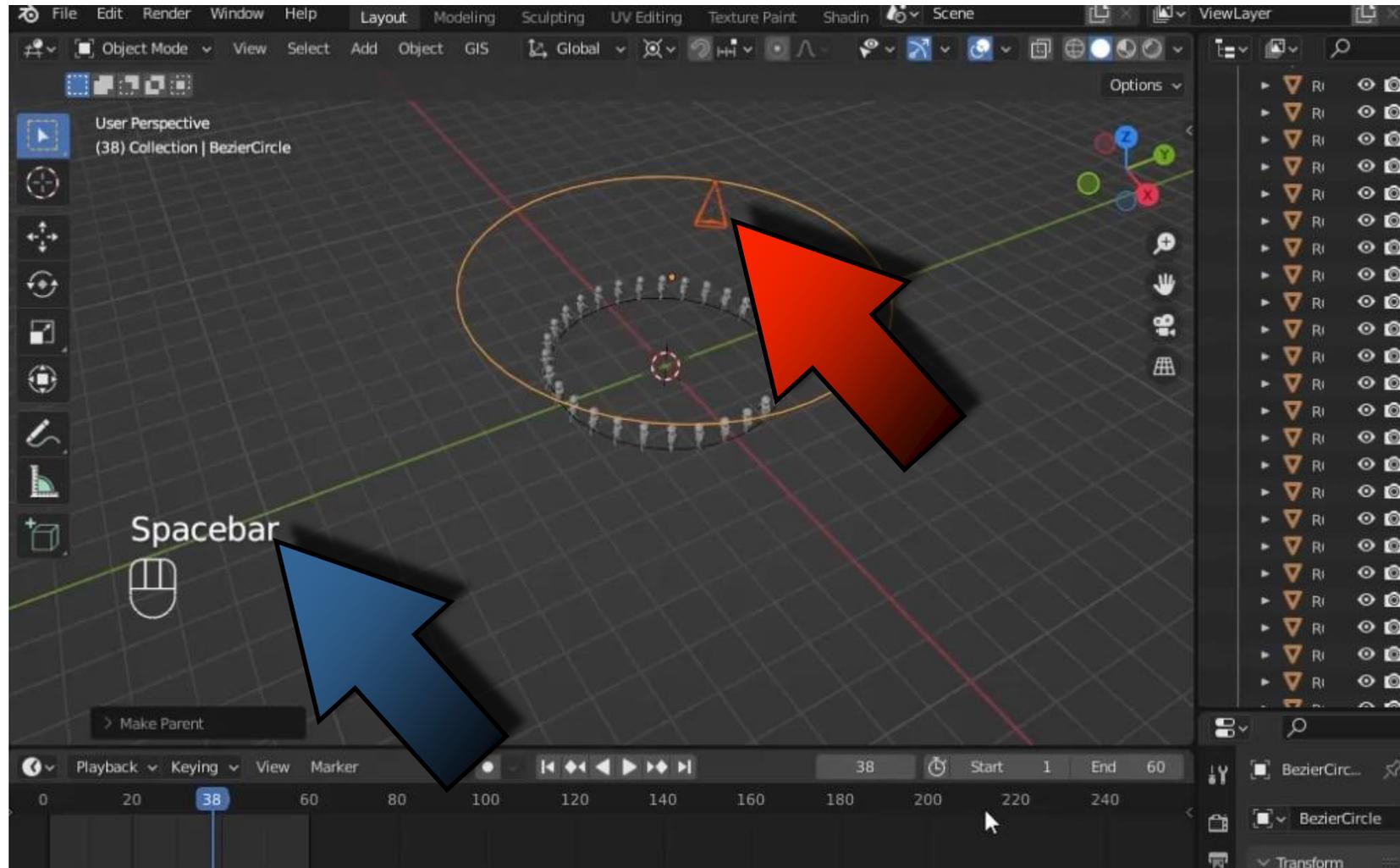
CHOOSE FOLLOW PATH



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POWER OF AR AND VR

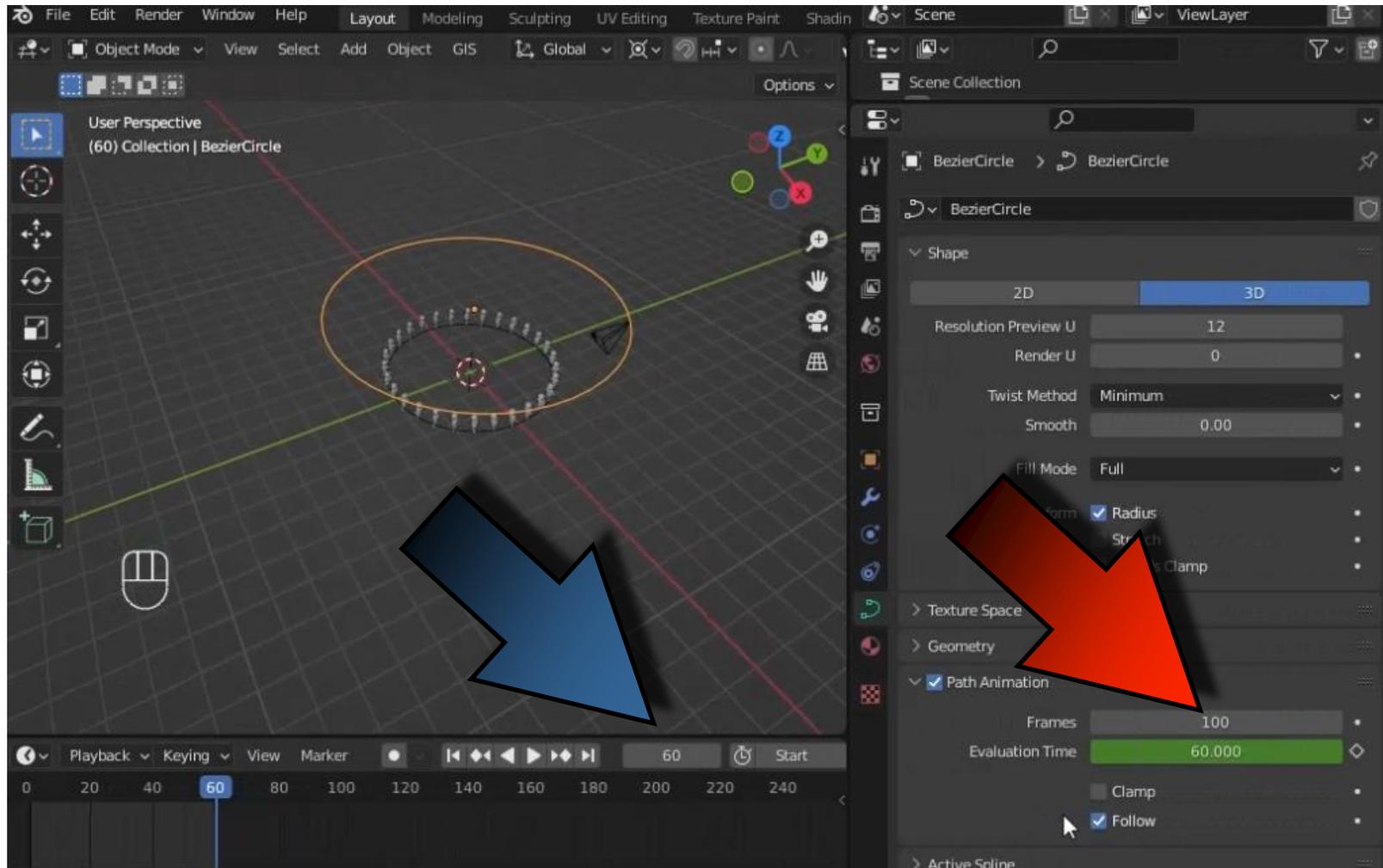
SEE HOW THE **CAMERA** MOVES



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WE NEED TO SELECT THE **CURVE** AND **FILM** PARAMETERS



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IF THERE ARE MANY MODELS, THEY SHOULD BE GROUPED
SELECT THEM AND PRESS M



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**WE WILL CREATE A NEW COLLECTION CALLED
ROBOT**



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ALL ROBOT MODELS ARE IN ONE PLACE



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CHANGE THE NUMBER OF FILM FRAMES TO **30**



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CHANGE THE NUMBER OF CURVE FRAMES TO 30 AS WELL



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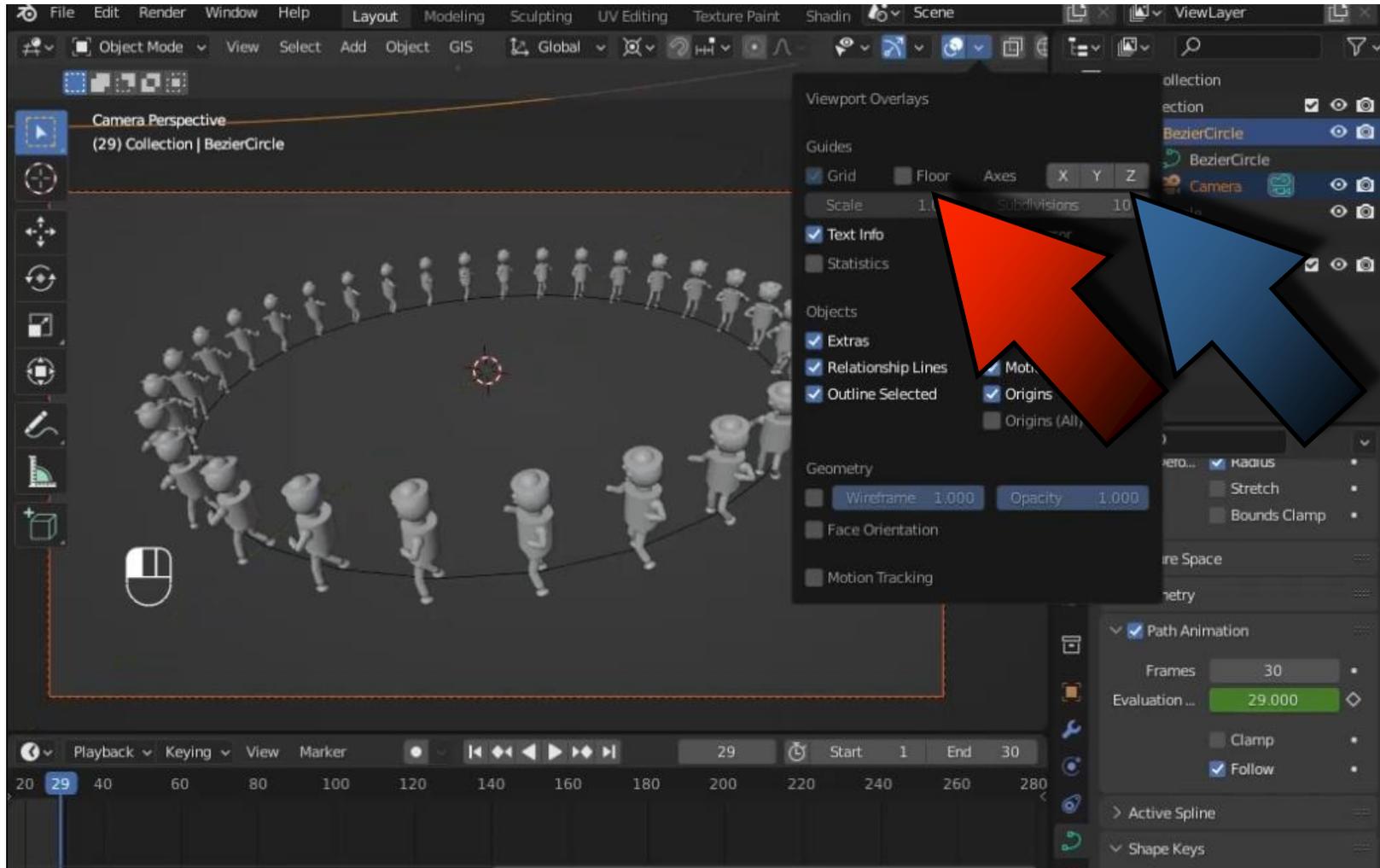
RUN ANIMATION THE EFFECT IS ALREADY BETTER



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FOR A BETTER VIEW YOU CAN TURN OFF THE FLOOR AND AXES



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EXPERIMENT WITH CURVE SETTINGS



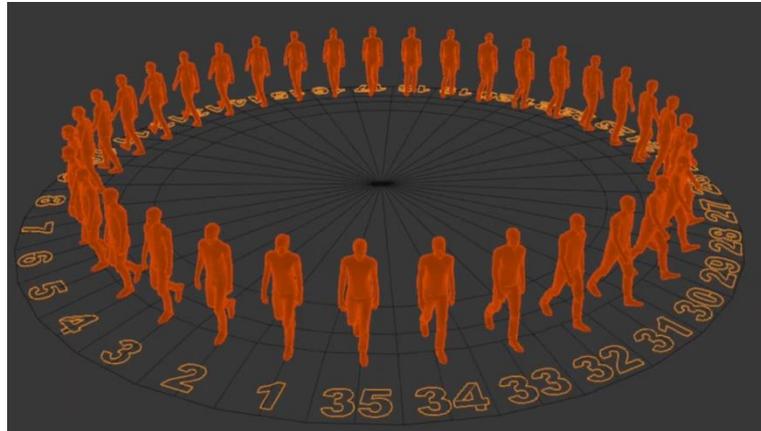
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**HERE YOU CAN SEE SAMPLE VISUALIZATIONS
THAT WE MAKE IN CLASSES, MADE FOR **35 FRAMES****

<https://www.youtube.com/watch?v=ToDXpC5eqDA>



<https://www.youtube.com/watch?v=HKvcTBVT700>



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THANK YOU FOR YOUR ATTENTION



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JACEK KAWAŁEK