



AI For Animation at Autodesk: **MLDeformer, MotionMaker, FaceAnimator & Flow Studio**

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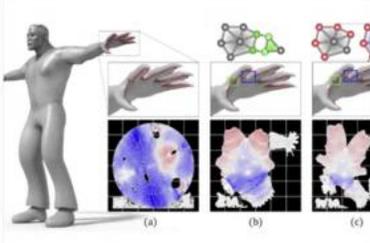


Autodesk Research



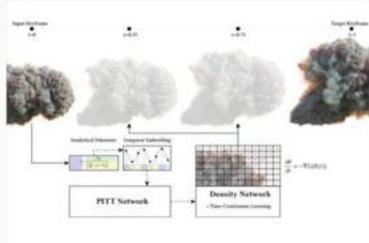
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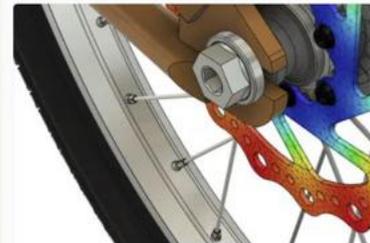
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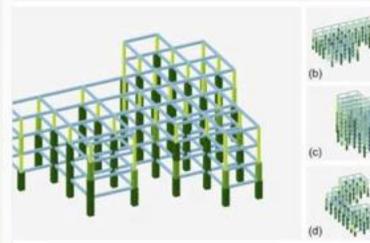
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Currently 71 active research projects involving AI



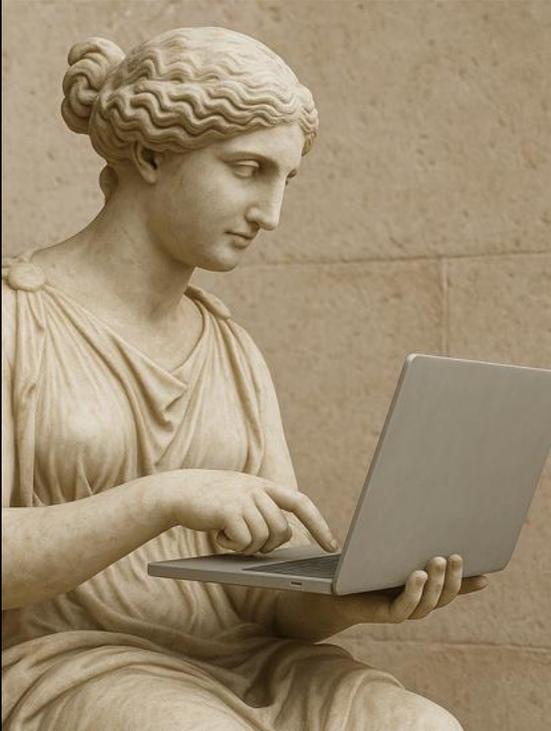
PROJECT

Bernini

Generative AI for 3D shape creation

AI in M&E



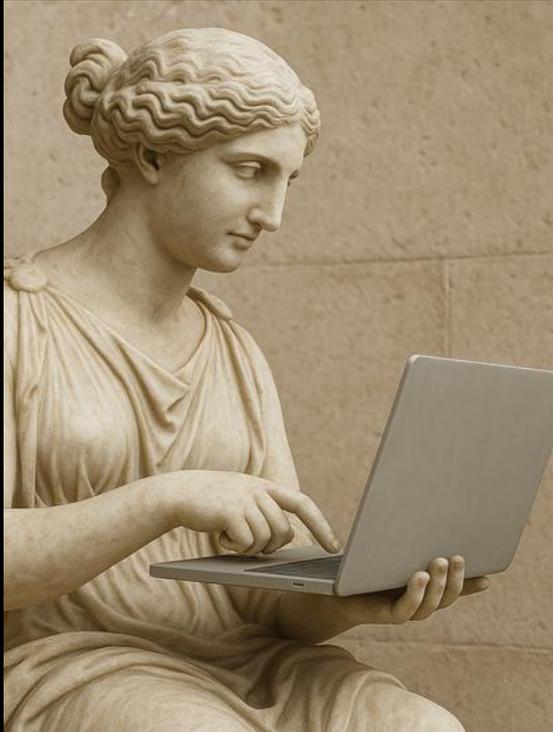


“

Malim ut res domesticas ai sustineat,
quo artes atque litteras sim, quam
artes meas litterasque ea mihi eripiant
ut ipsis ministeriis domi detinear.

”

JoannaM, MMXXIV AC, Reddit

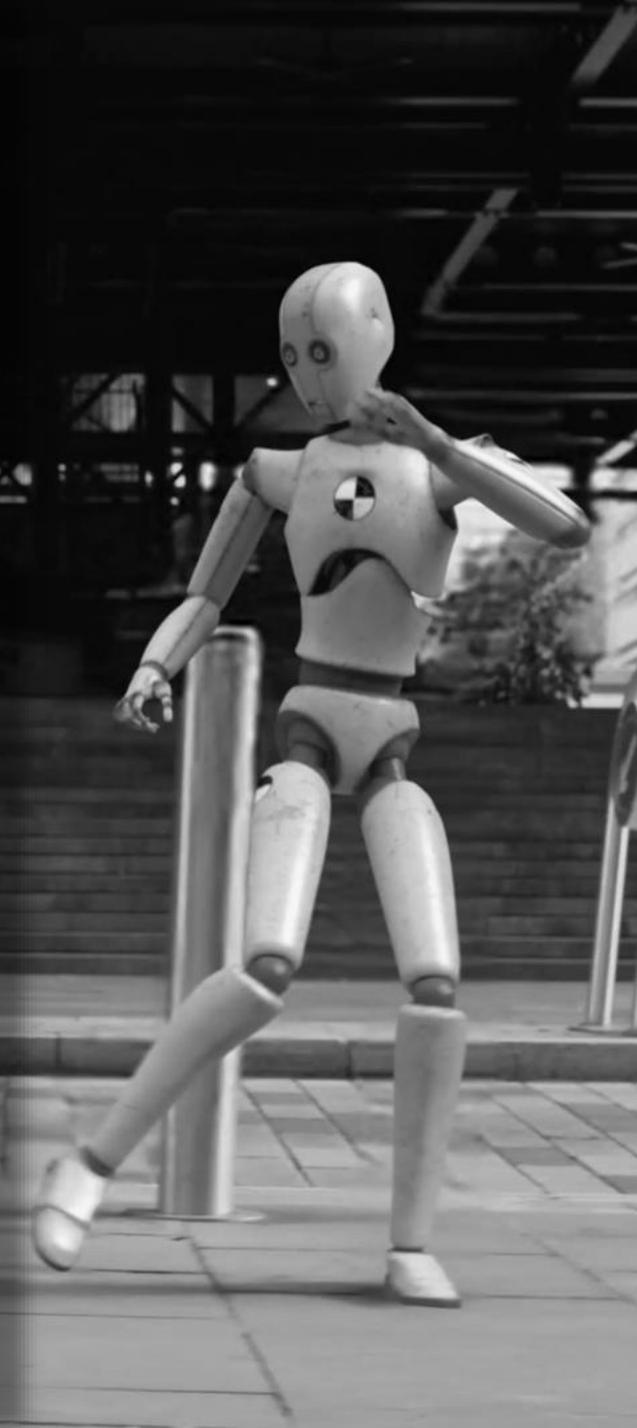


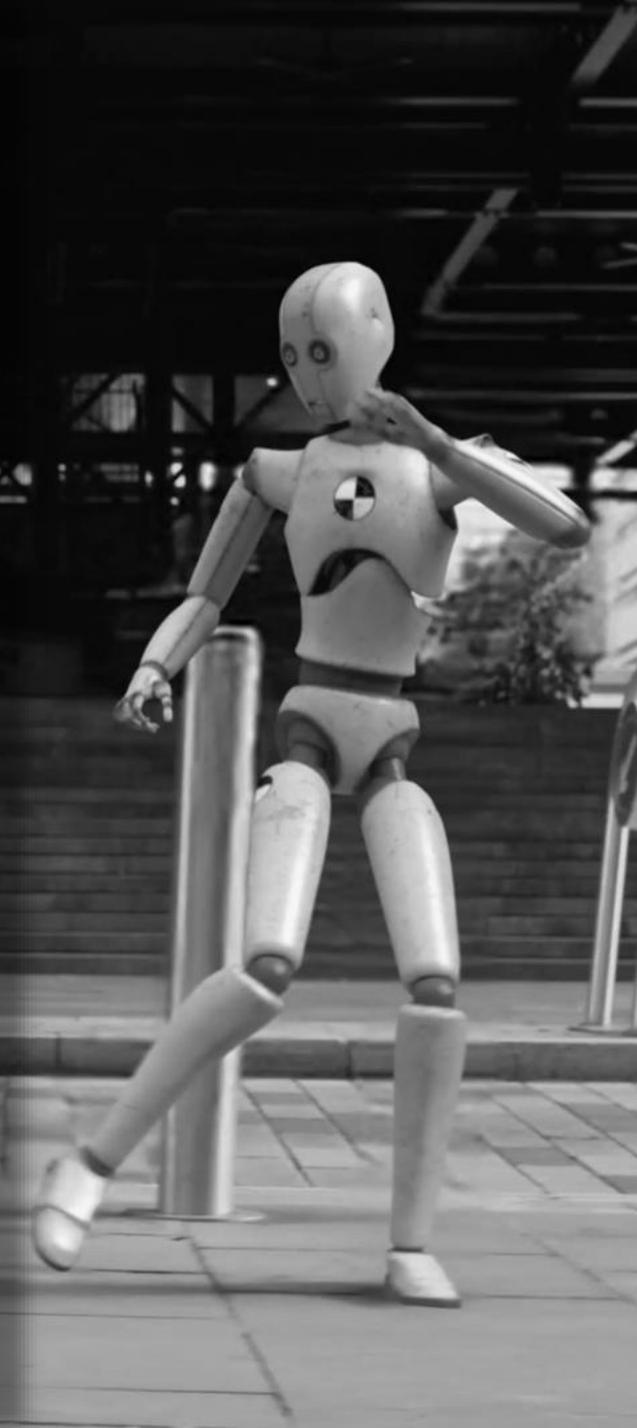
“

I want AI to do my laundry and dishes so that I can do art and writing, not for AI to do my art and writing so that I can do my laundry and dishes.

”

JoannaM, MMXXIV AC, Reddit





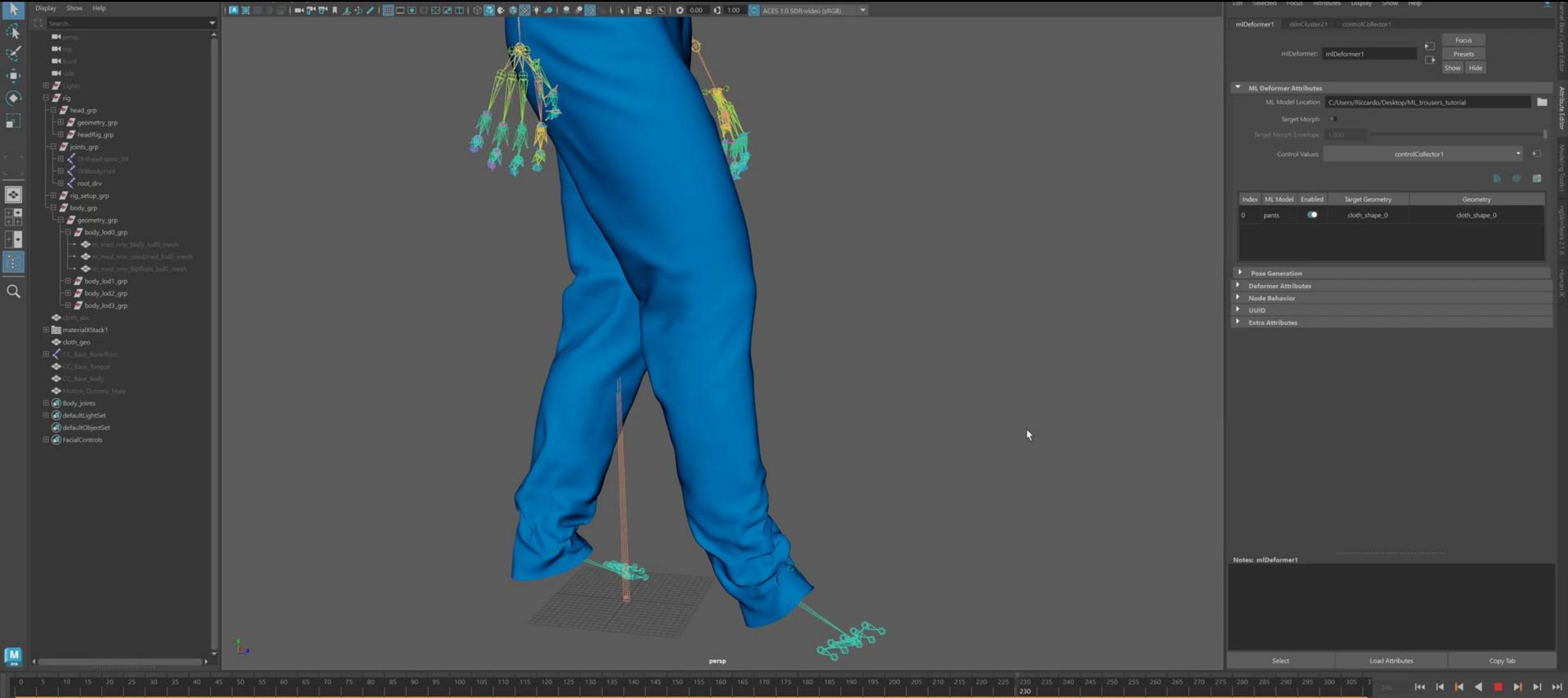


MLDeformer

Fast Deformation Approximation

MLDeformer: what is it for?

MLDeformer: what is it for?



MLDeformer: what is it for?



MLDeformer: how does it work?

Golaem Deep Configuration

Configuration Node : glmDeepConfShape1

General Settings

OutDir : N:/demos/golaemDeep/deep/human

Asset Root Name : humanChar

Sampling Training Deformer

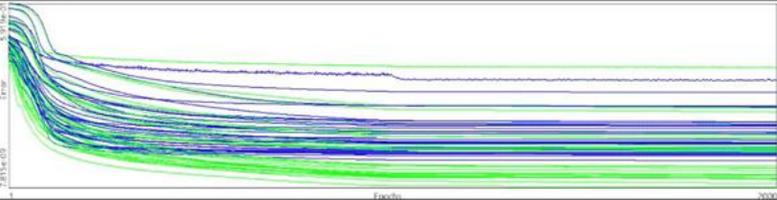
Advanced Properties

Hidden Layers	2	Epochs	100	Batch Size	1000
Nb Neurons	128	Rate	99999977648	Test Split	15 %
Dropout	5 %	Error	MSE	Checkpoint	50 Epochs

Activation : RELU

Use CUDA GPU Acceleration

Training Results

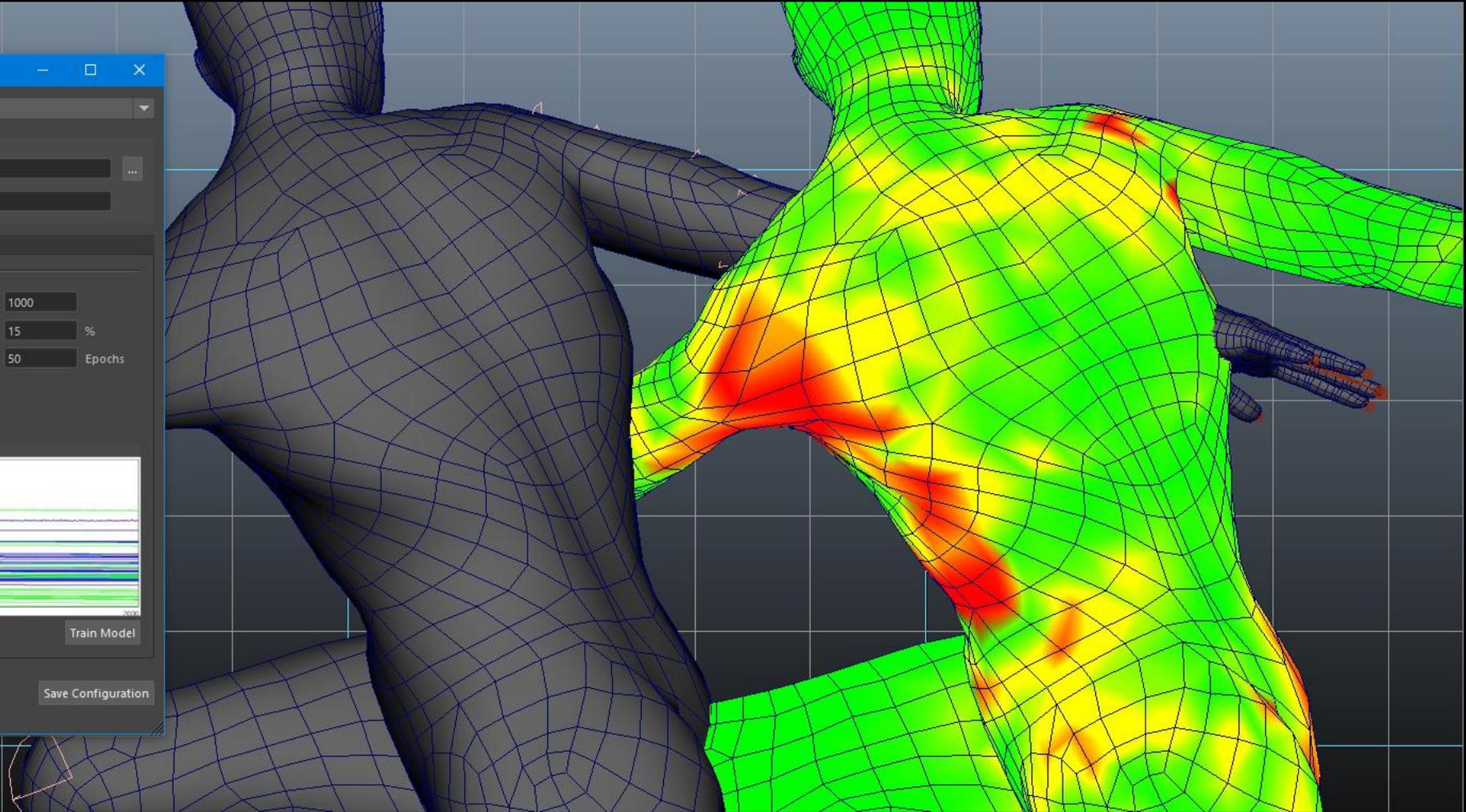


The graph displays training error over 100 epochs. The y-axis is labeled 'Error' and the x-axis is 'Epochs'. Multiple lines represent different runs, all showing a rapid decrease in error from approximately 0.5 to near 0 within the first 10 epochs, followed by a plateau.

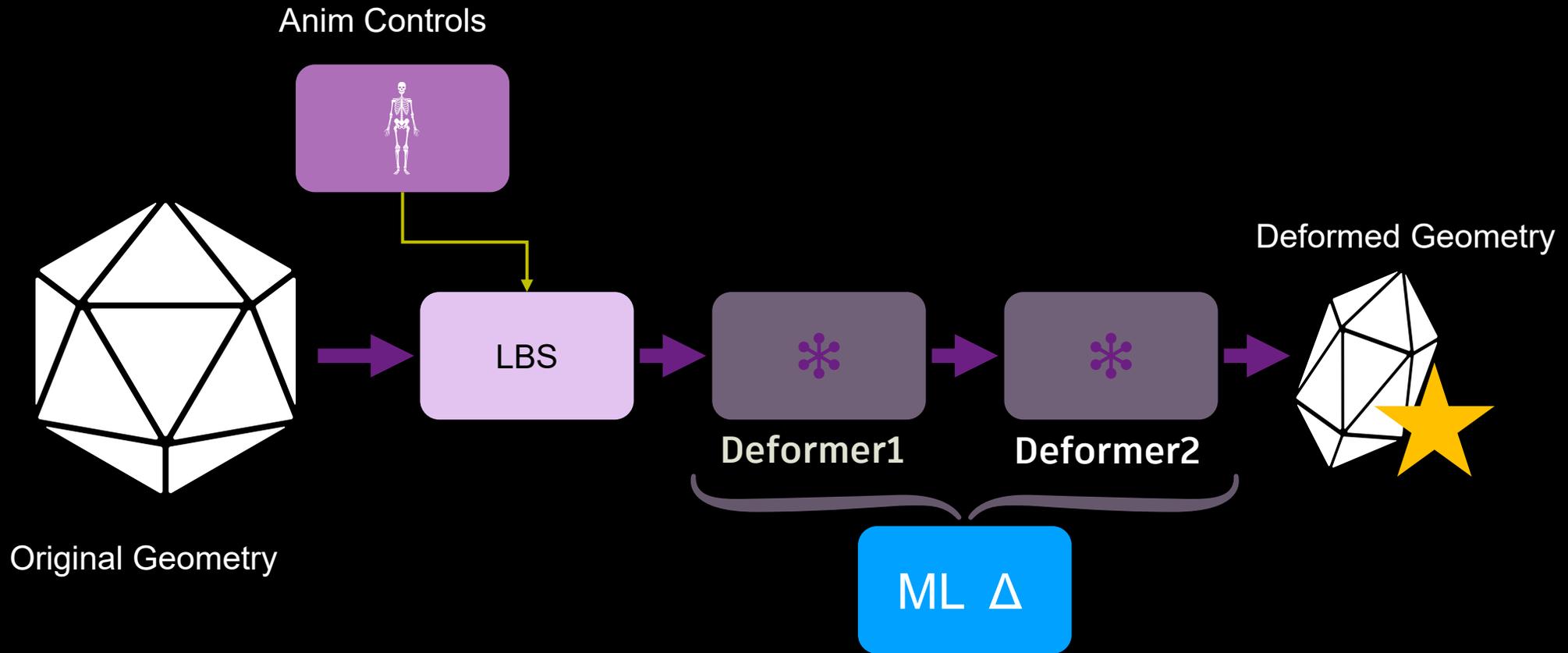
Status : Idle

Train Model

Save Configuration



MLDeformer: what is it for?

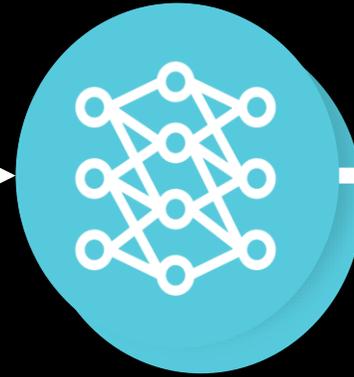


MLDeformer: how does it work?



INPUTS:
Bone Transf Matrix

OUTPUTS:
NL VPos - L VPos



FCNN+PCA
2 HL/128Neurons

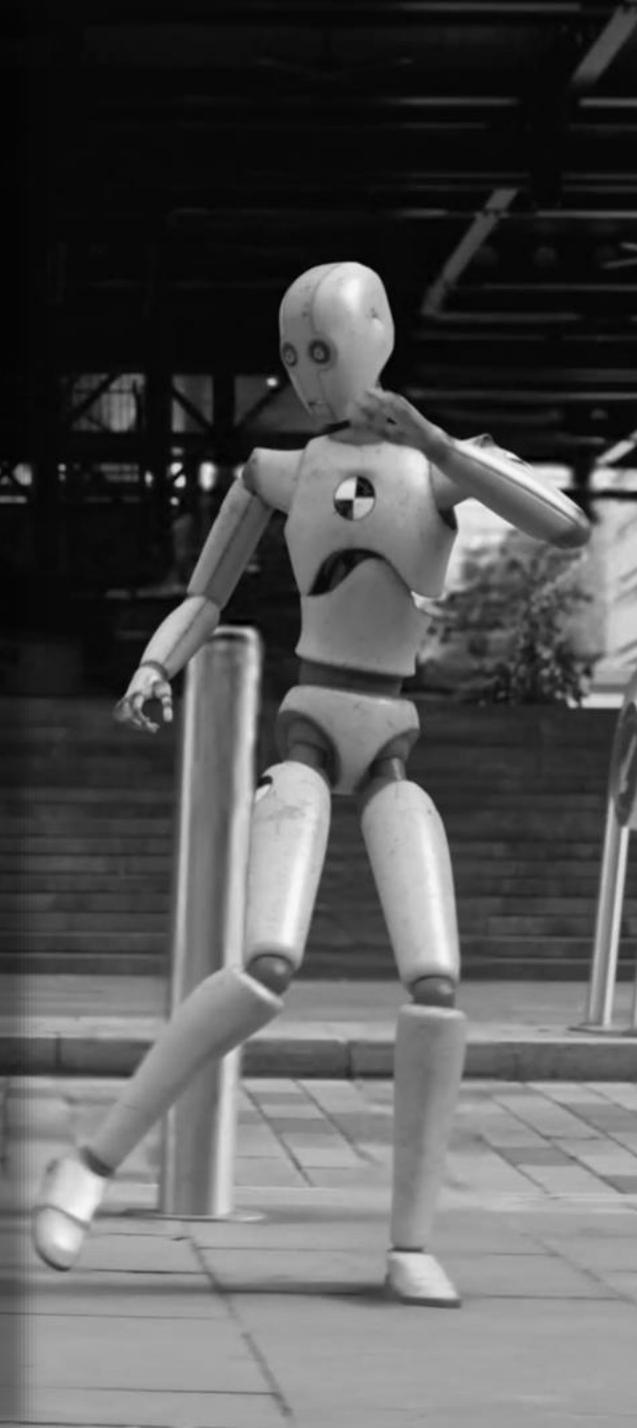
LOSS

TRAINING

MLDeformer: in a nutshell

- BOYD
- Evaluate rigs or part of rigs faster (usually)
- Compress simulation deformations (cloth, muscles...)
- Allow portability (crowds, other DCCs, other studios)
- Dataset: thousands of frames (generated auto)

- Available since Maya 2025.2

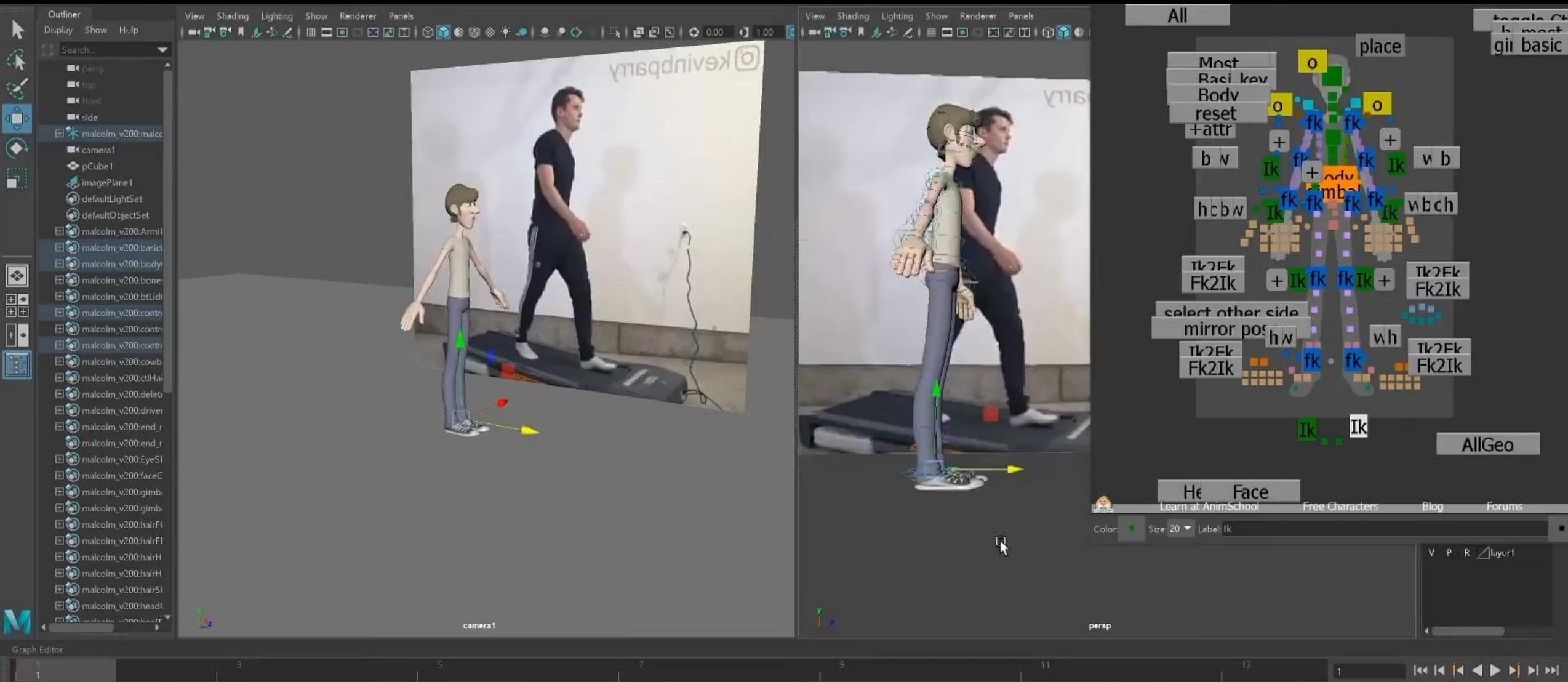




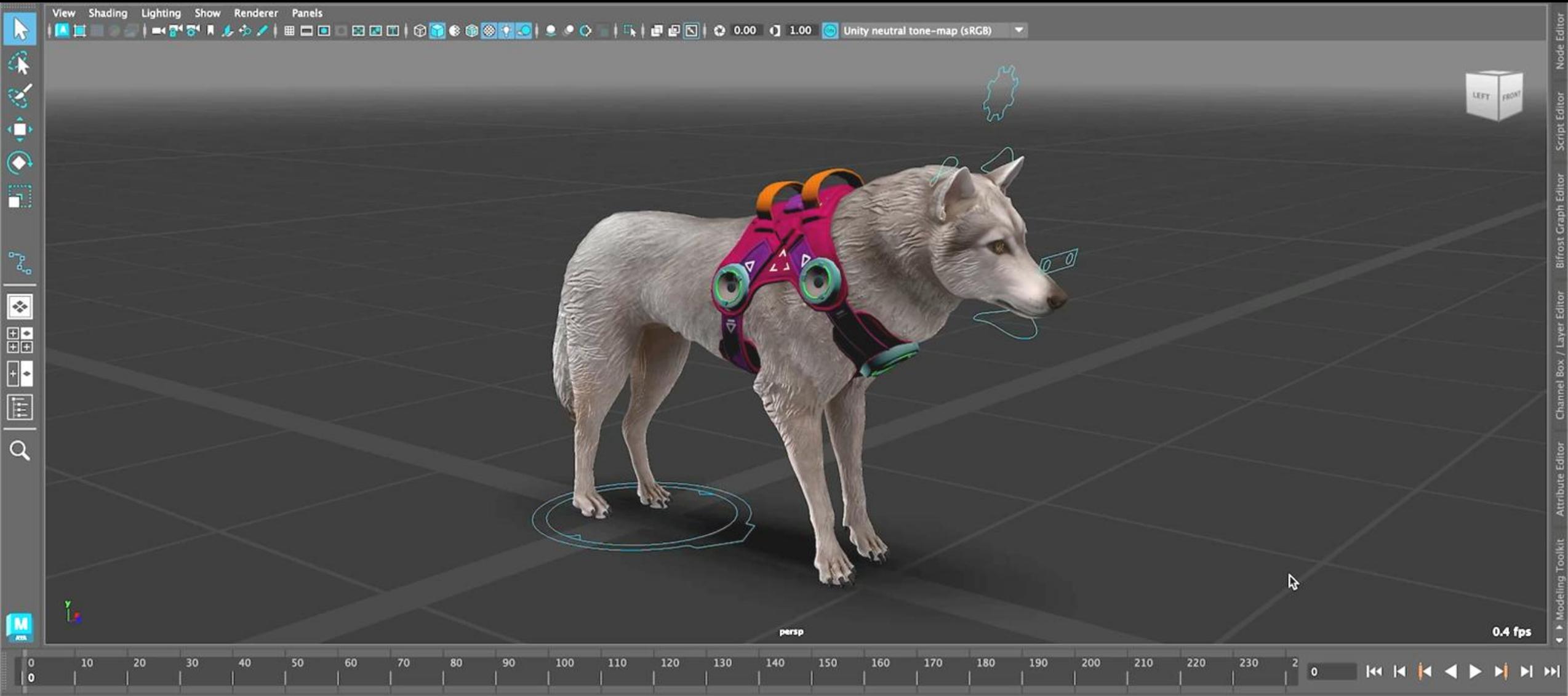
MotionMaker

Generative Locomotion

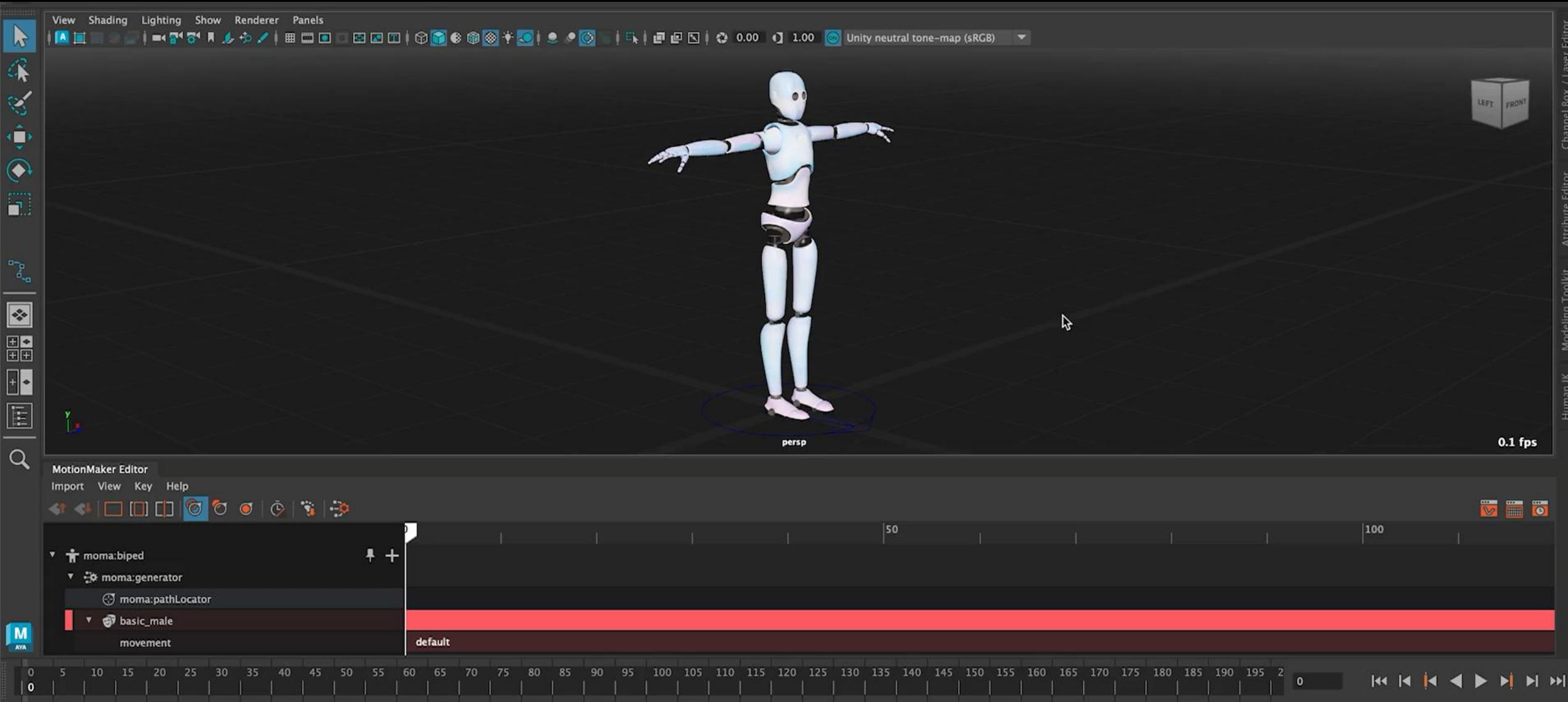
MotionMaker: what is it for?



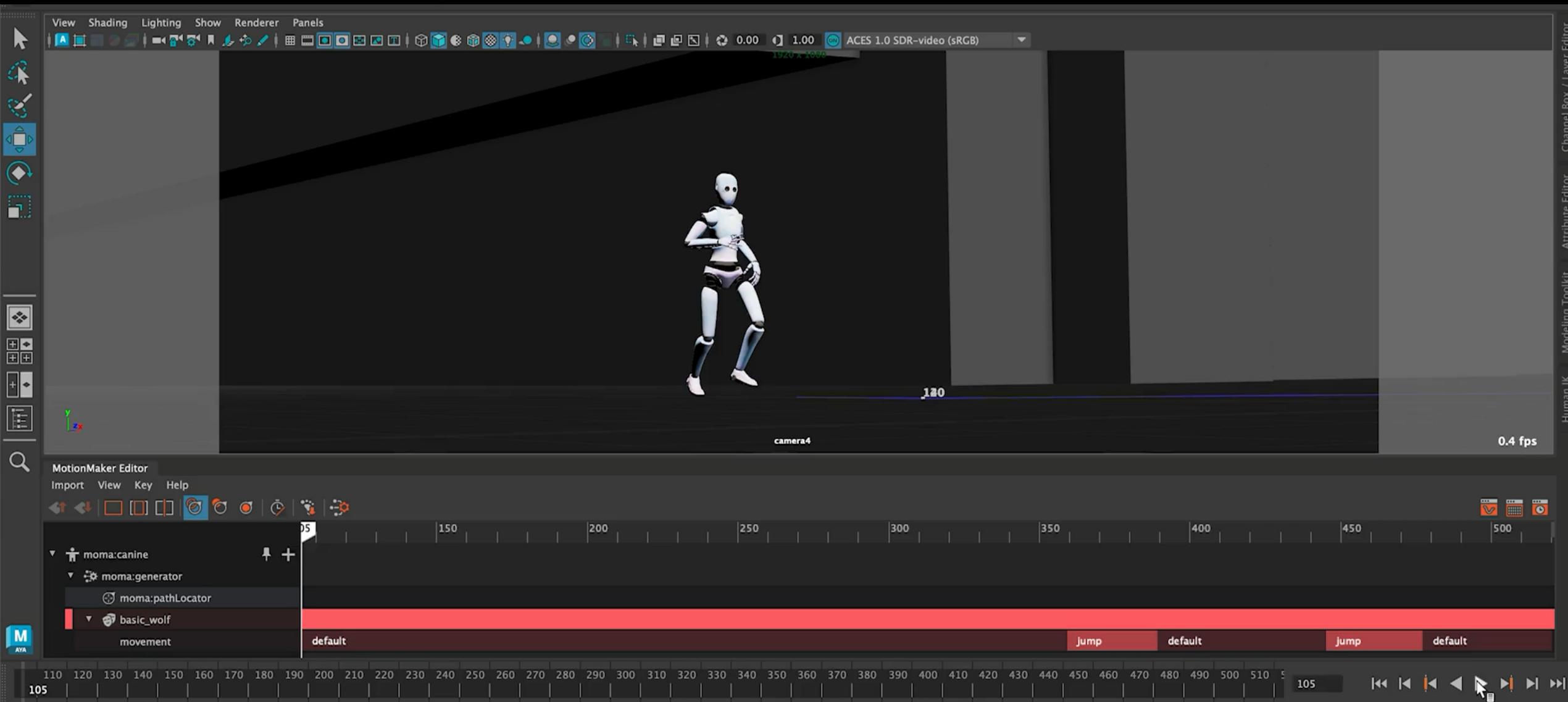
MotionMaker: what is it for?



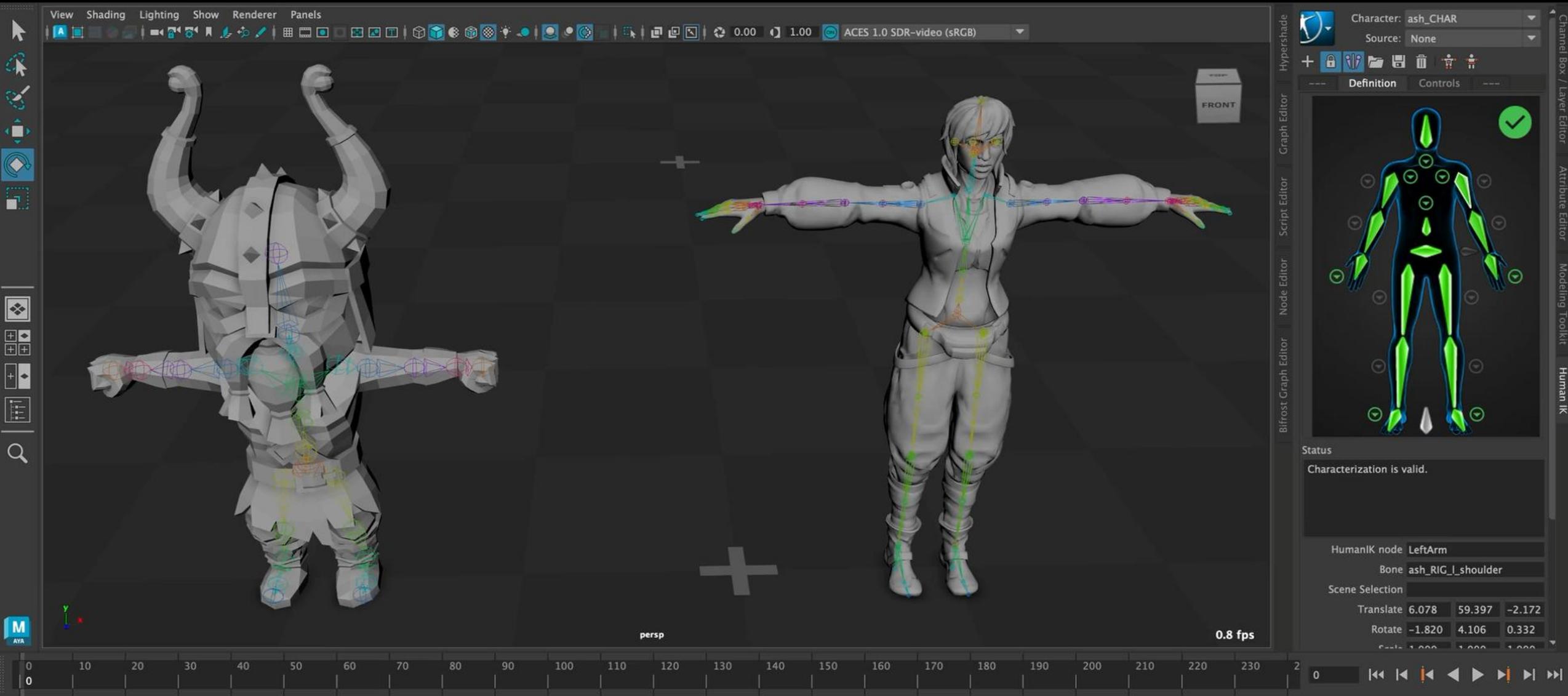
MotionMaker: what is it for?



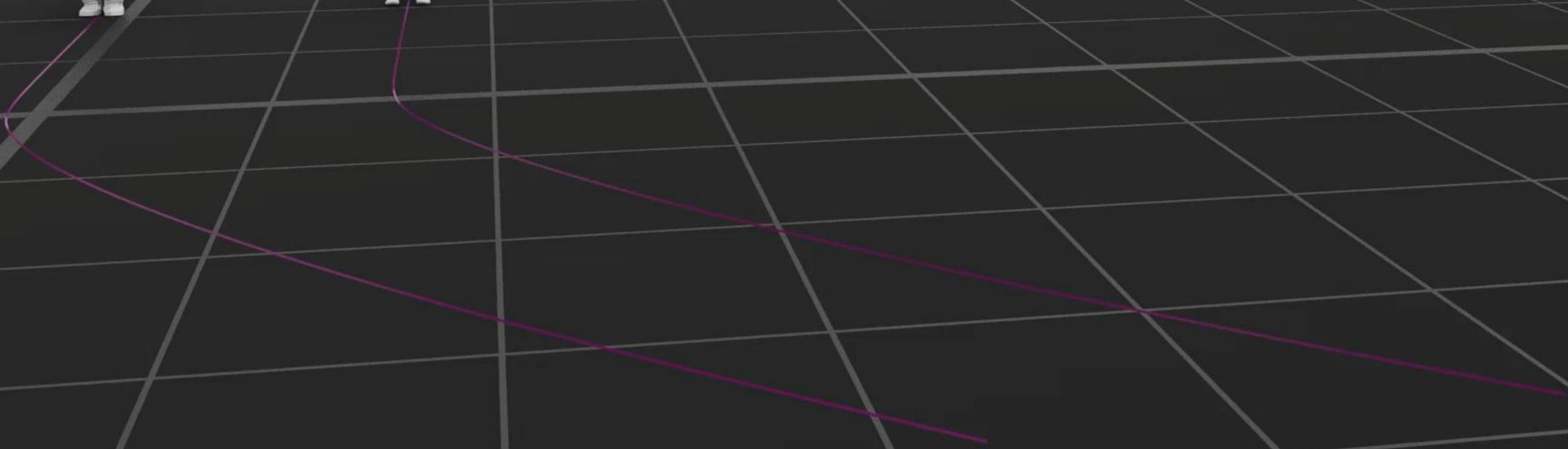
MotionMaker: what is it for?



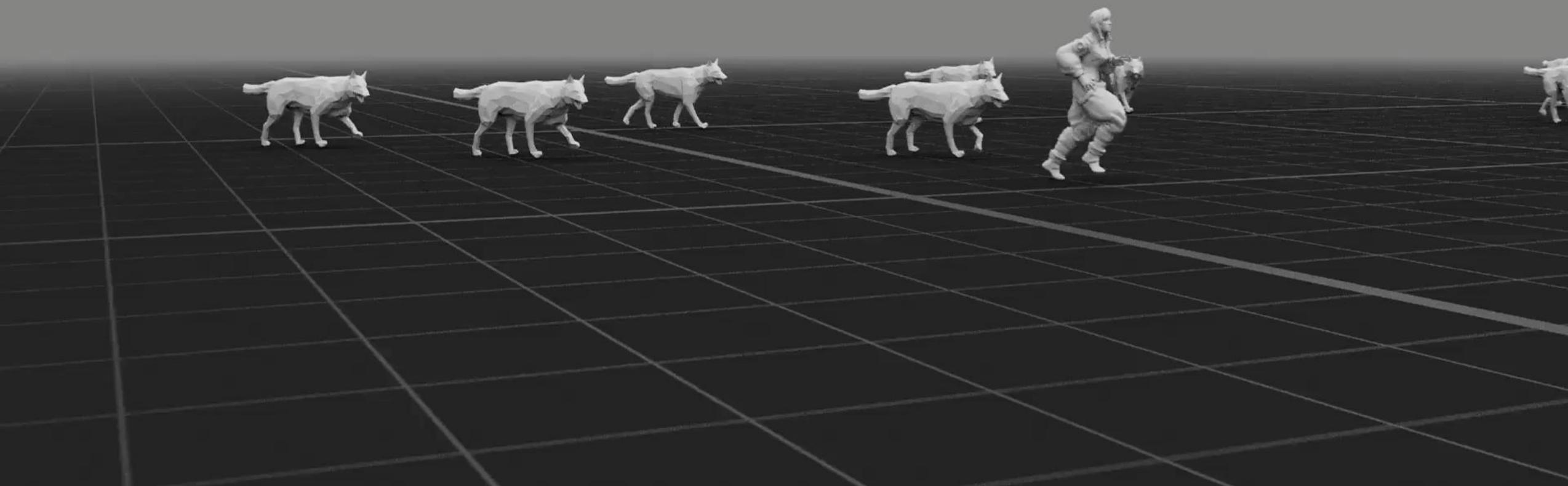
MotionMaker: what is it for?



MotionMaker: what is it for?



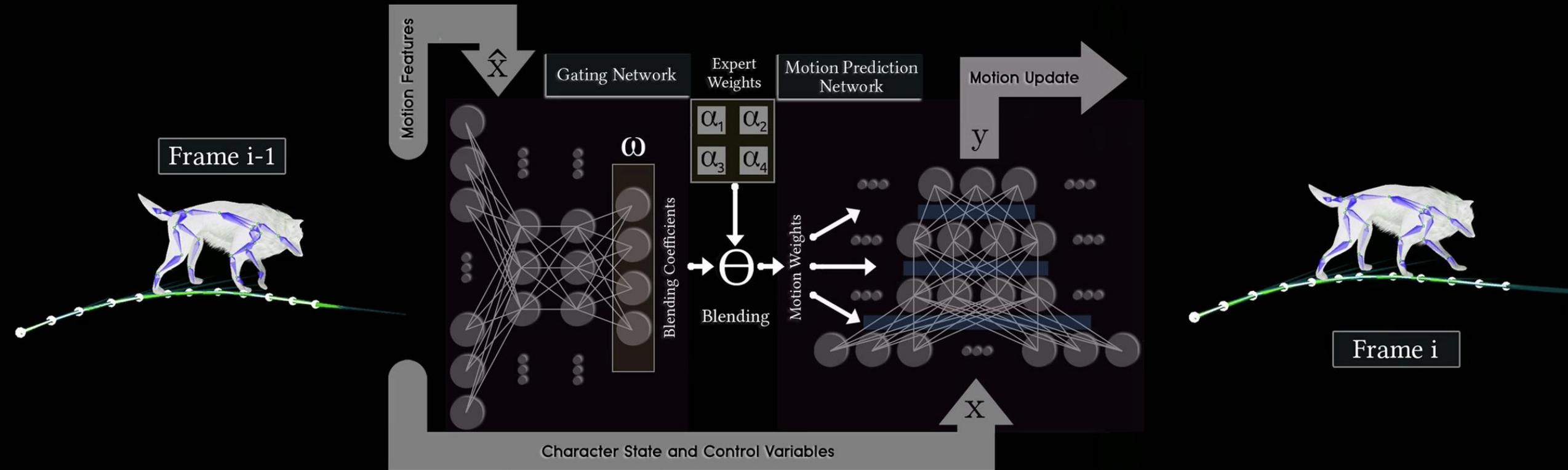
MotionMaker: what is it for?



MotionMaker: how does it work?



MotionMaker: how does it work?

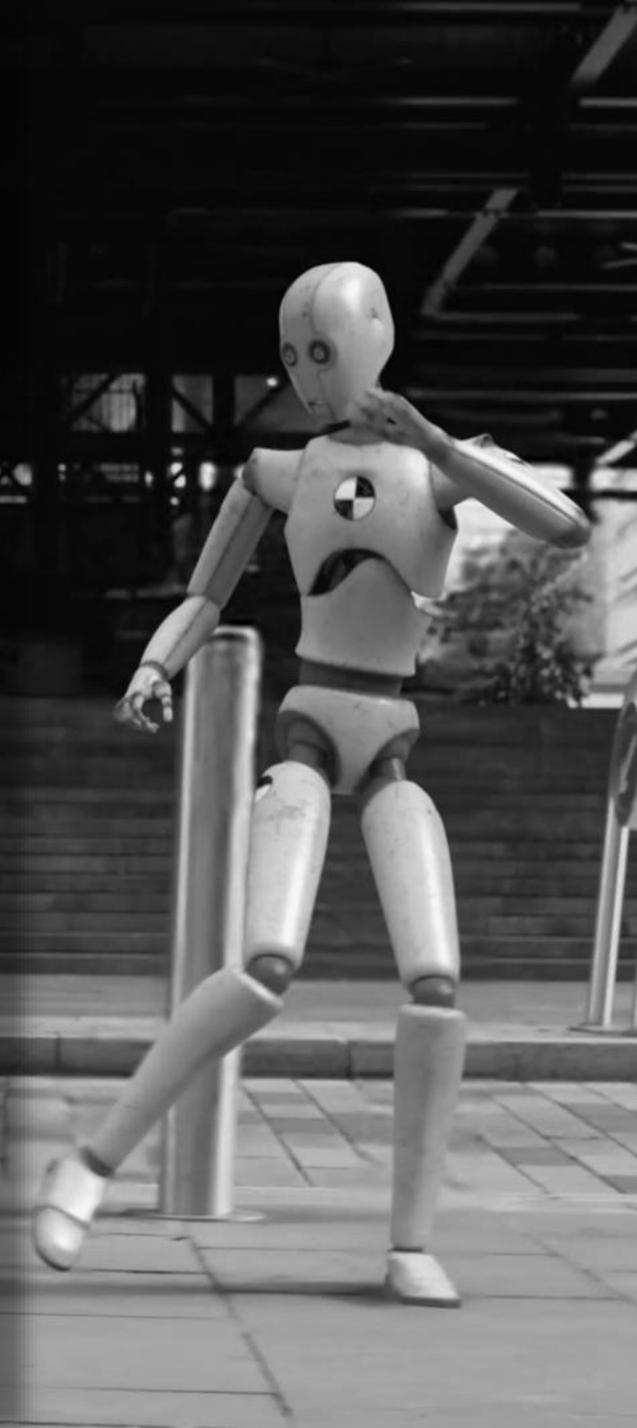


Zhang et al. 2018 Mode-Adaptive Neural Networks for Motion Control

MotionMaker: in a nutshell

- PreTrained (own the data) – 3 models available, more to come
- BYOD WIP
- For Layout / Blocking / Crowds
- Action Tag control
- Dataset: 10-15mn of animation

- Available since Maya 2026.1





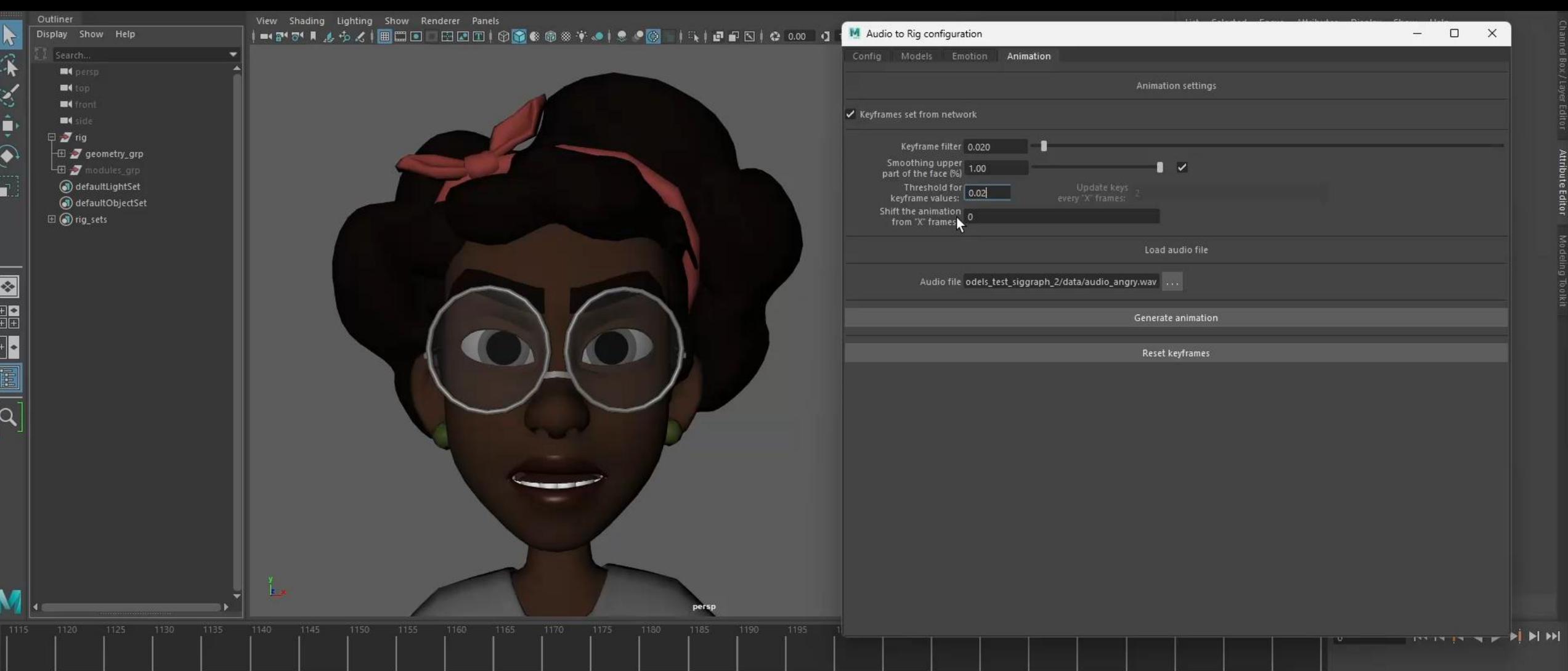
FaceAnimator

Audio based Lipsync &
Facial Animation

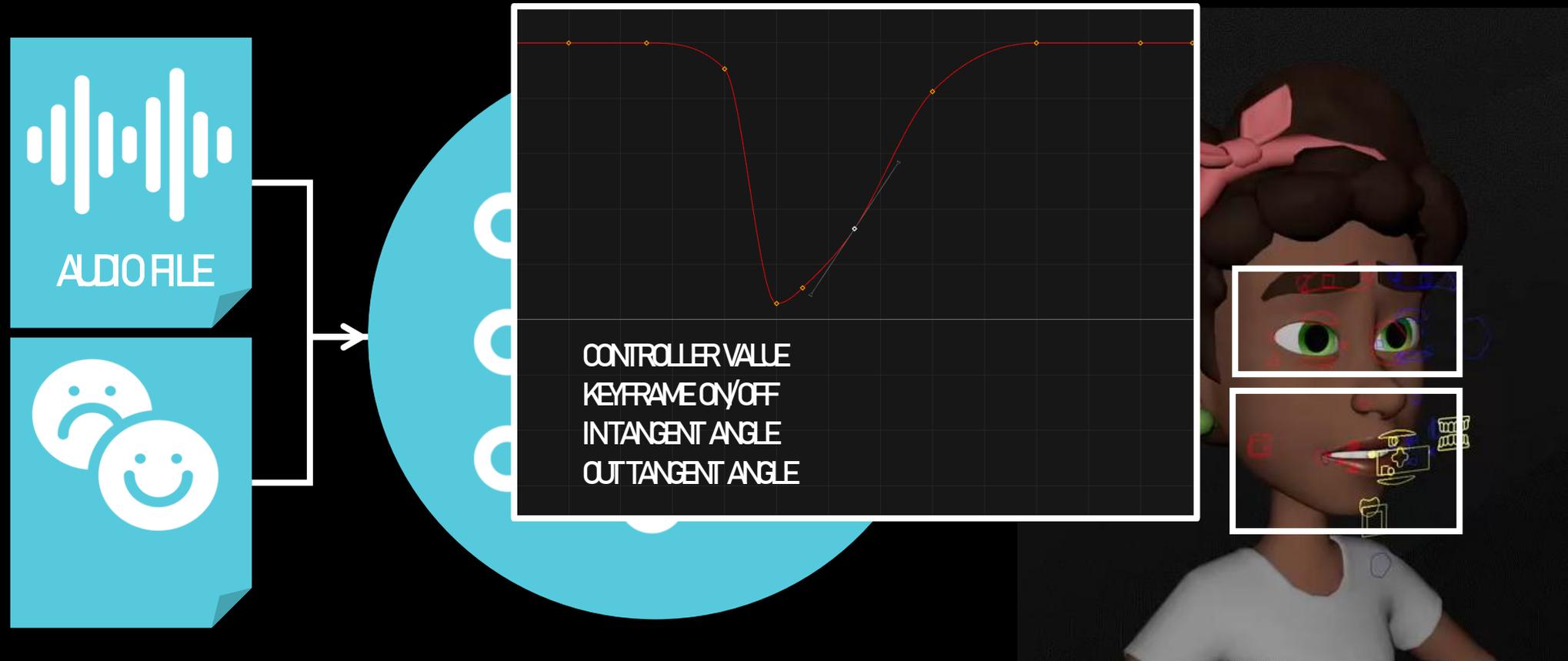
FaceAnimator: what is it for?

The image displays the Autodesk Maya interface, illustrating the FaceAnimator workflow. The central viewport shows a 3D character model with a complex rig structure overlaid, including various control points and constraints for facial animation. The Outliner on the left lists the rig components, such as `face_rig:ctrl_grp` and `face_rig:M_upper_lips_glob`. The Graph Editor on the right provides a detailed view of the animation curves for the selected rig component, showing multiple channels like `Translate X`, `L_lower_lips_out_shap`, and `R_upper_lips_out_shap` over time. The timeline at the bottom indicates the current frame is 1486.

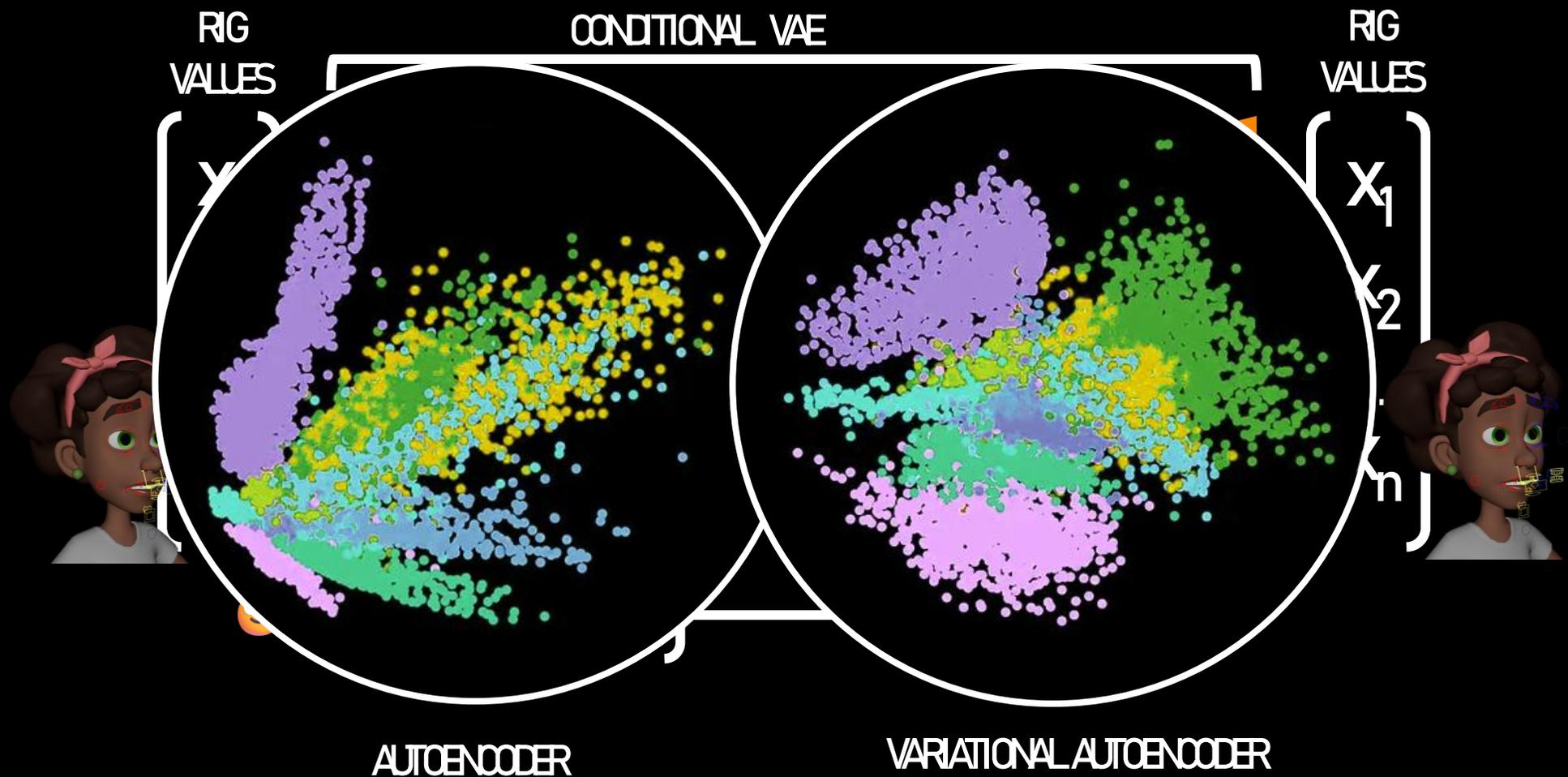
FaceAnimator: what is it for?



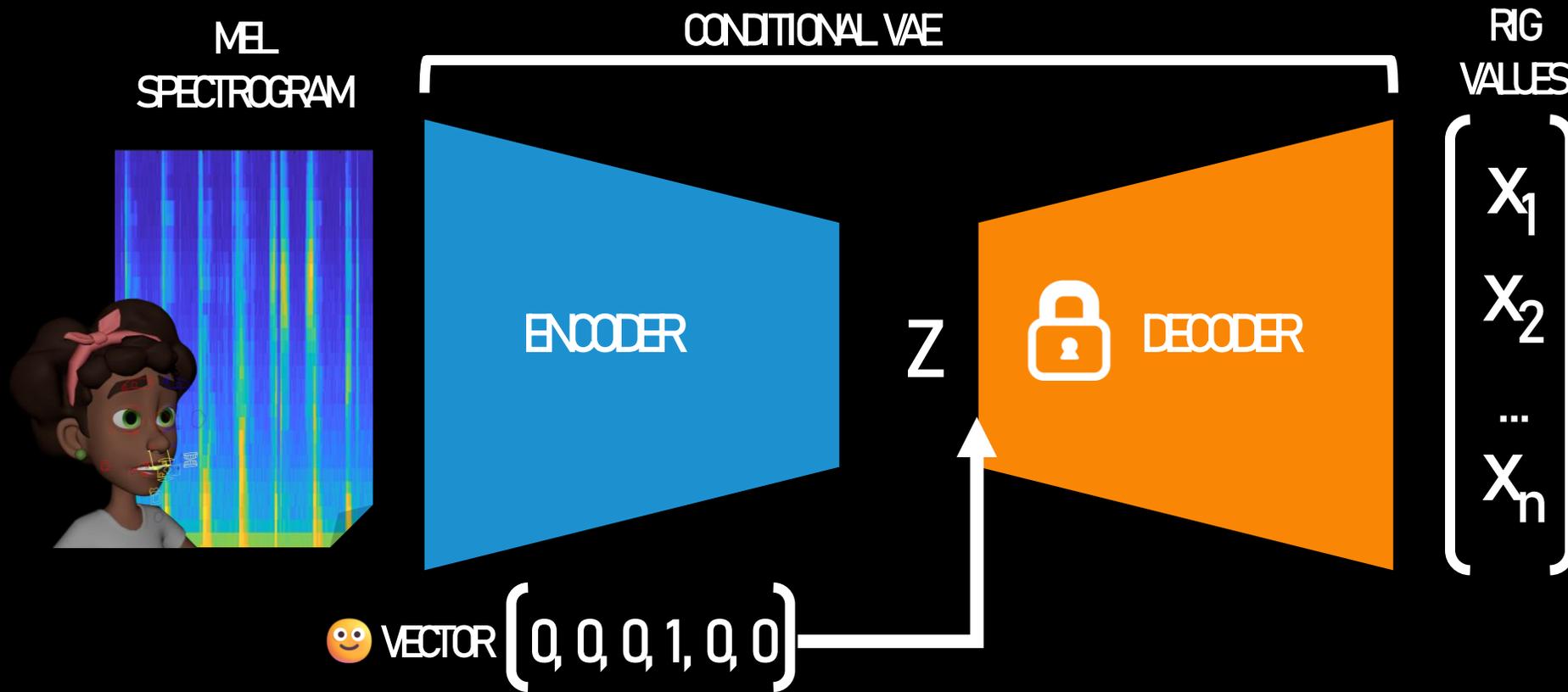
FaceAnimator: how does it work?



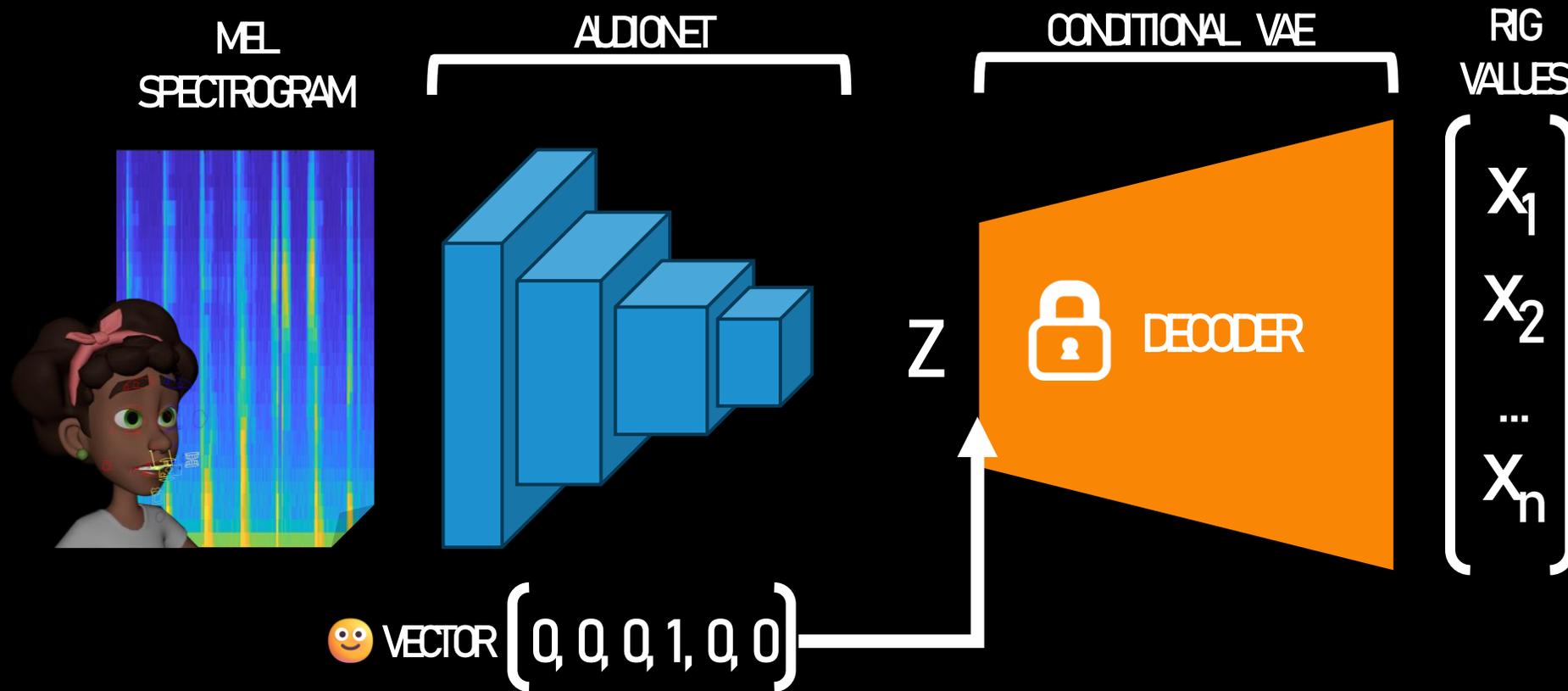
FaceAnimator: how does it work?



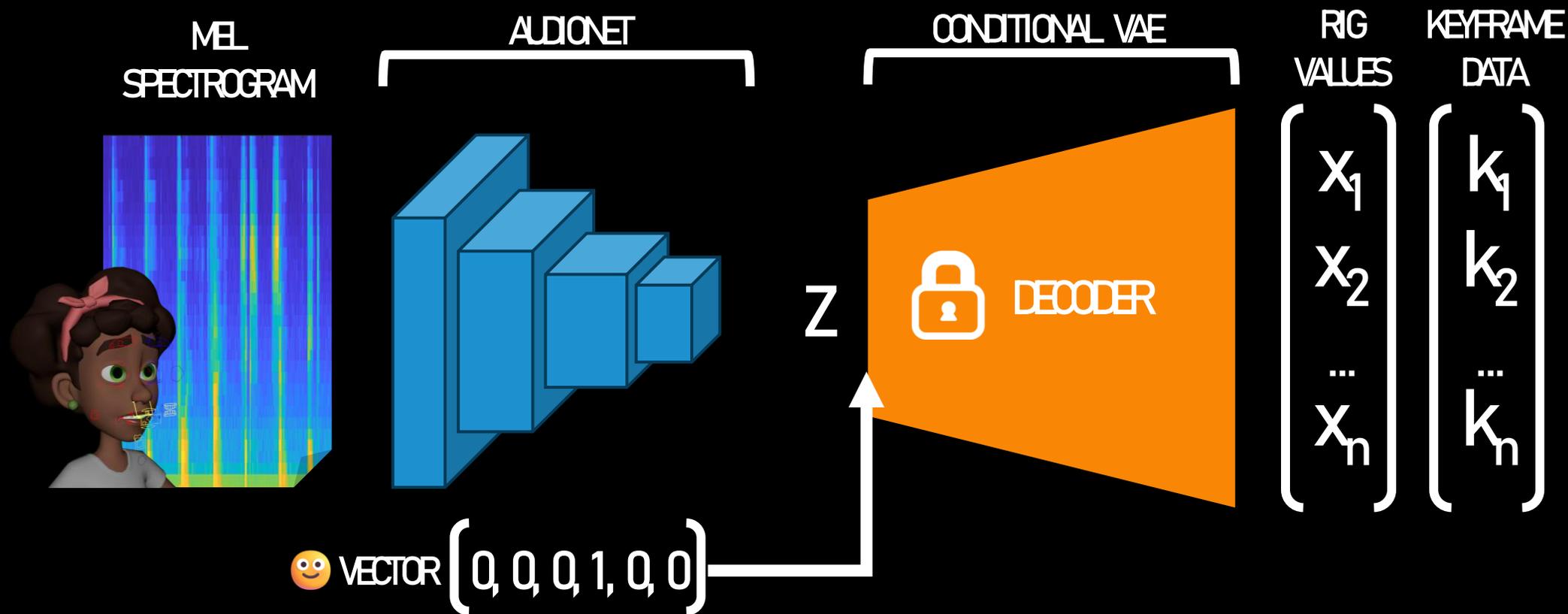
FaceAnimator: how does it work?



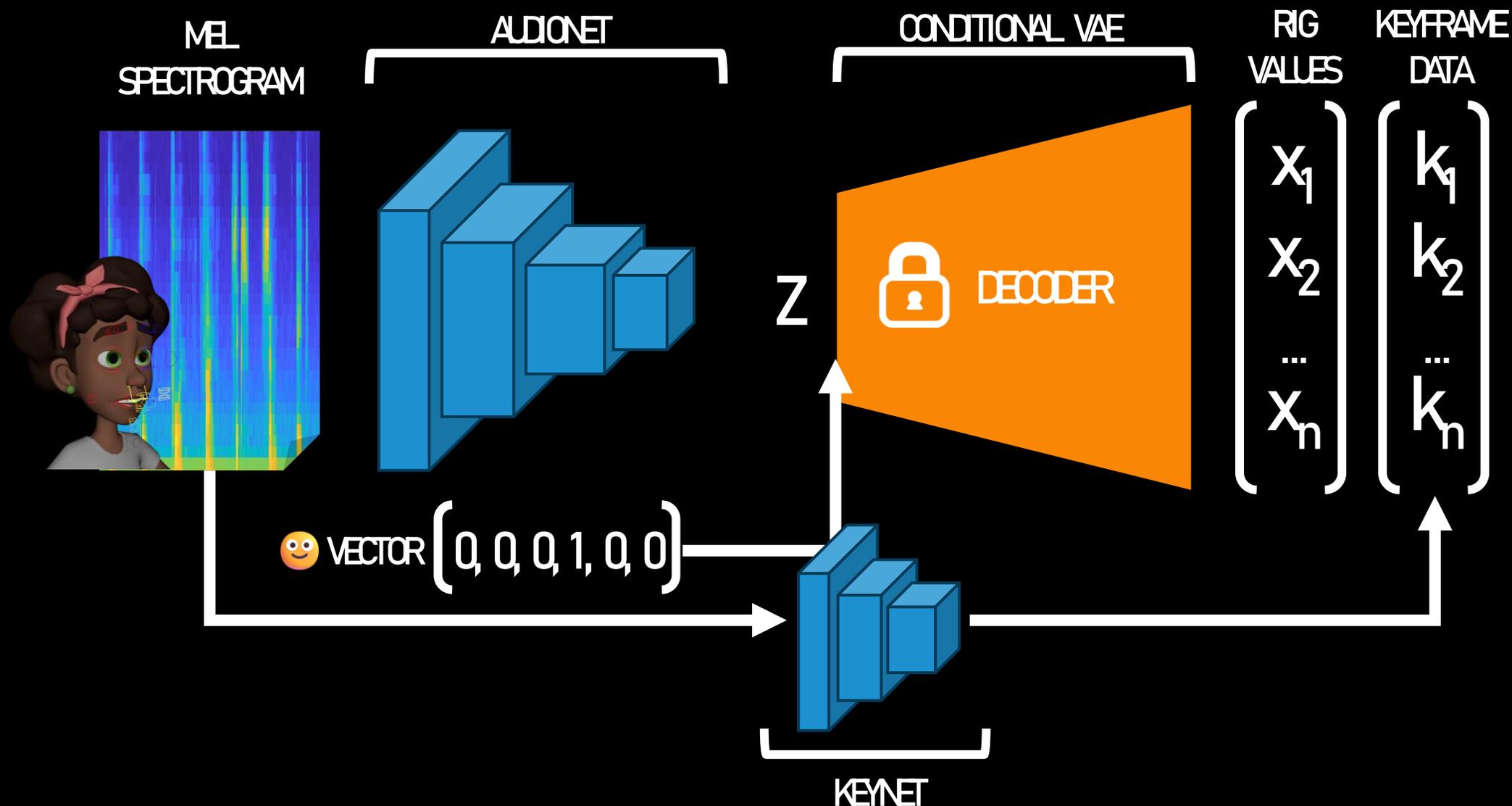
FaceAnimator: how does it work?



FaceAnimator: how does it work?



FaceAnimator: how does it work?



FaceAnimator: in a nutshell

- BOYD
- Animator / rigger friendly
- Respect studio style
- Emotion control
- Dataset: 2mn of animation

- Beta in Maya 2027





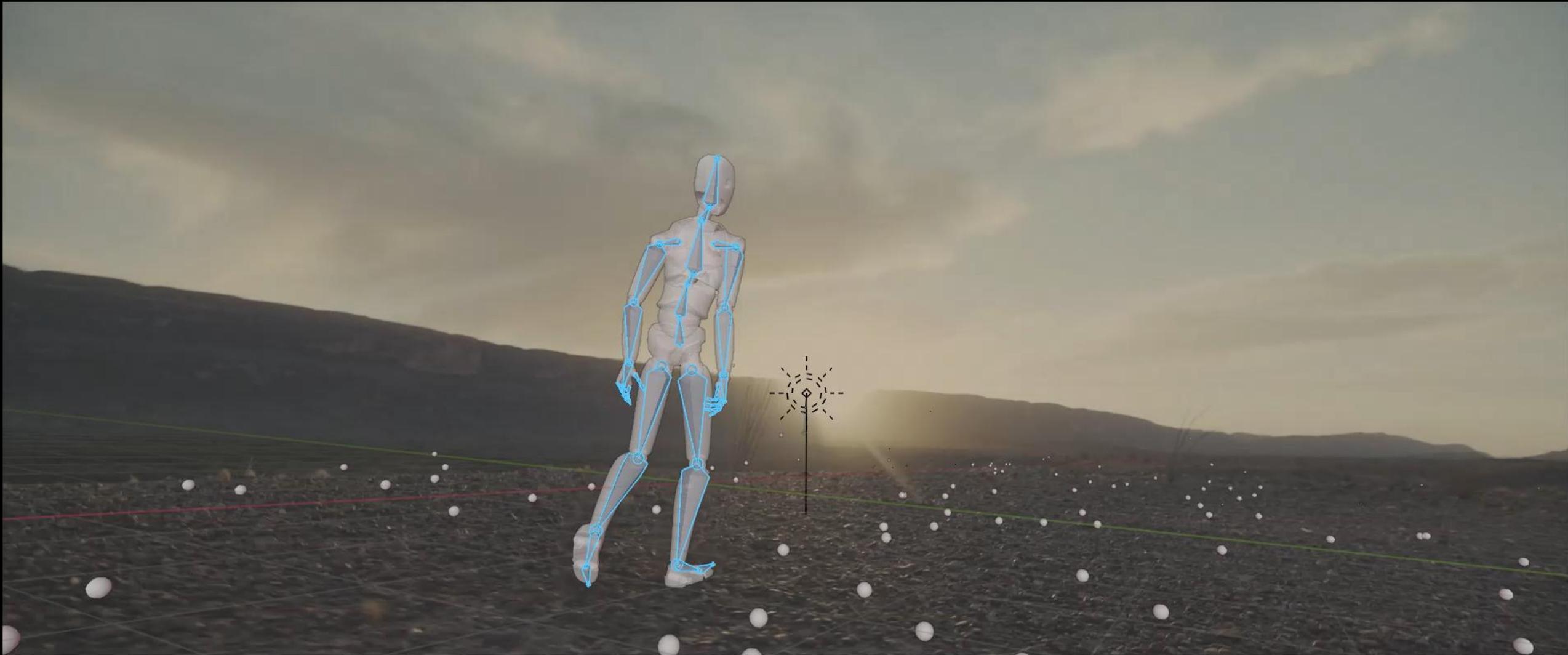
Flow Studio

Cloud based video to 3d
toolset

Flow Studio: what is it for? Markerless mocap



Flow Studio: what is it for? Camera track



Flow Studio: what is it for? DCCs compatibility

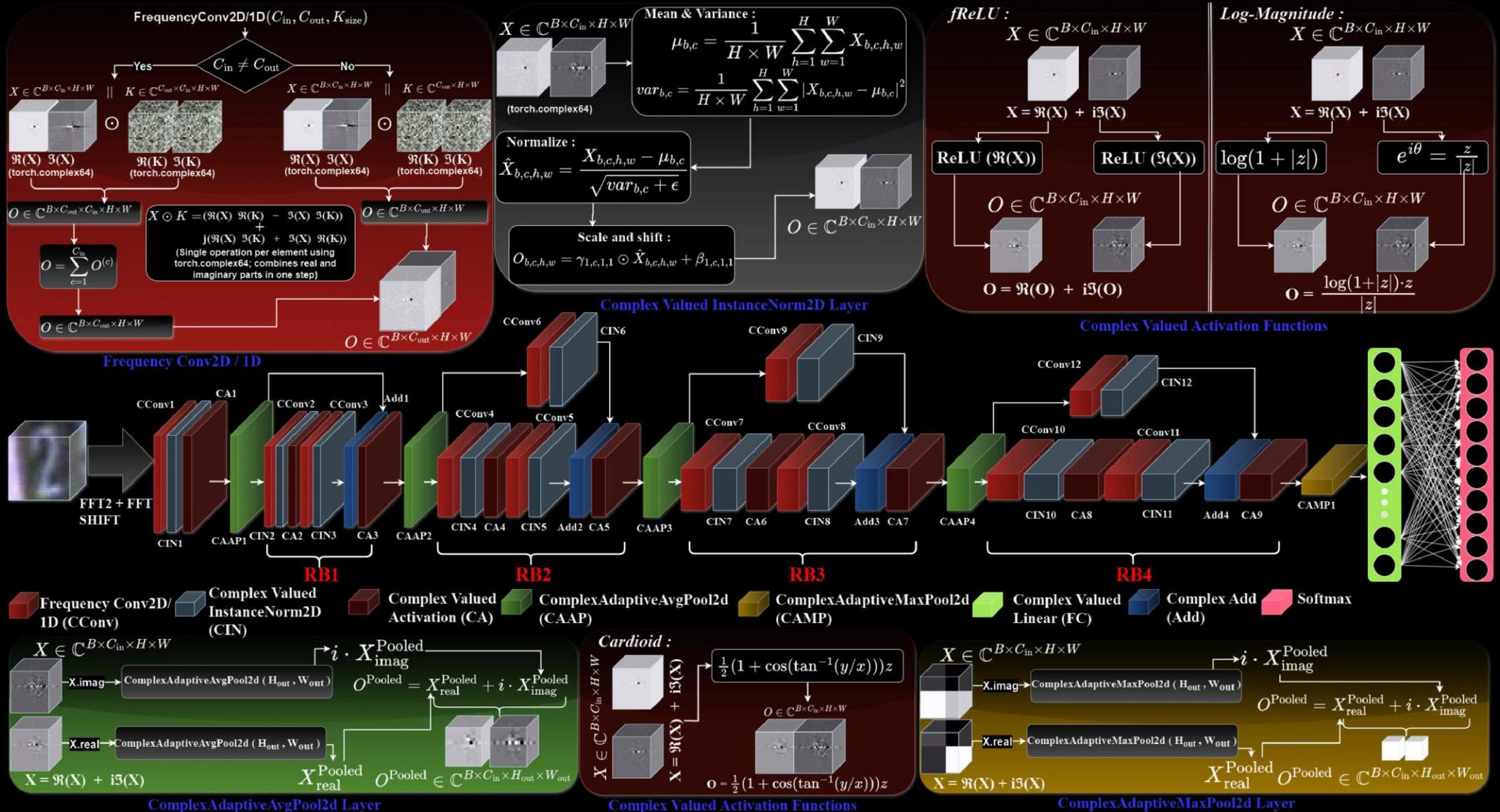


Flow Studio: what is it for? Face Animation



Flow Studio: what is it for? Video to 3d

Flow Studio: how does it work?



Flow Studio: in a nutshell

- Pretrained (own the data)
- Specialized networks for specialized tasks
- Fully integrated with Maya, UE, Blender
- Cloud based

- Available with M&E Collection entitlement
- Freemium access

AI For Animation at Autodesk: **What's next?**

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