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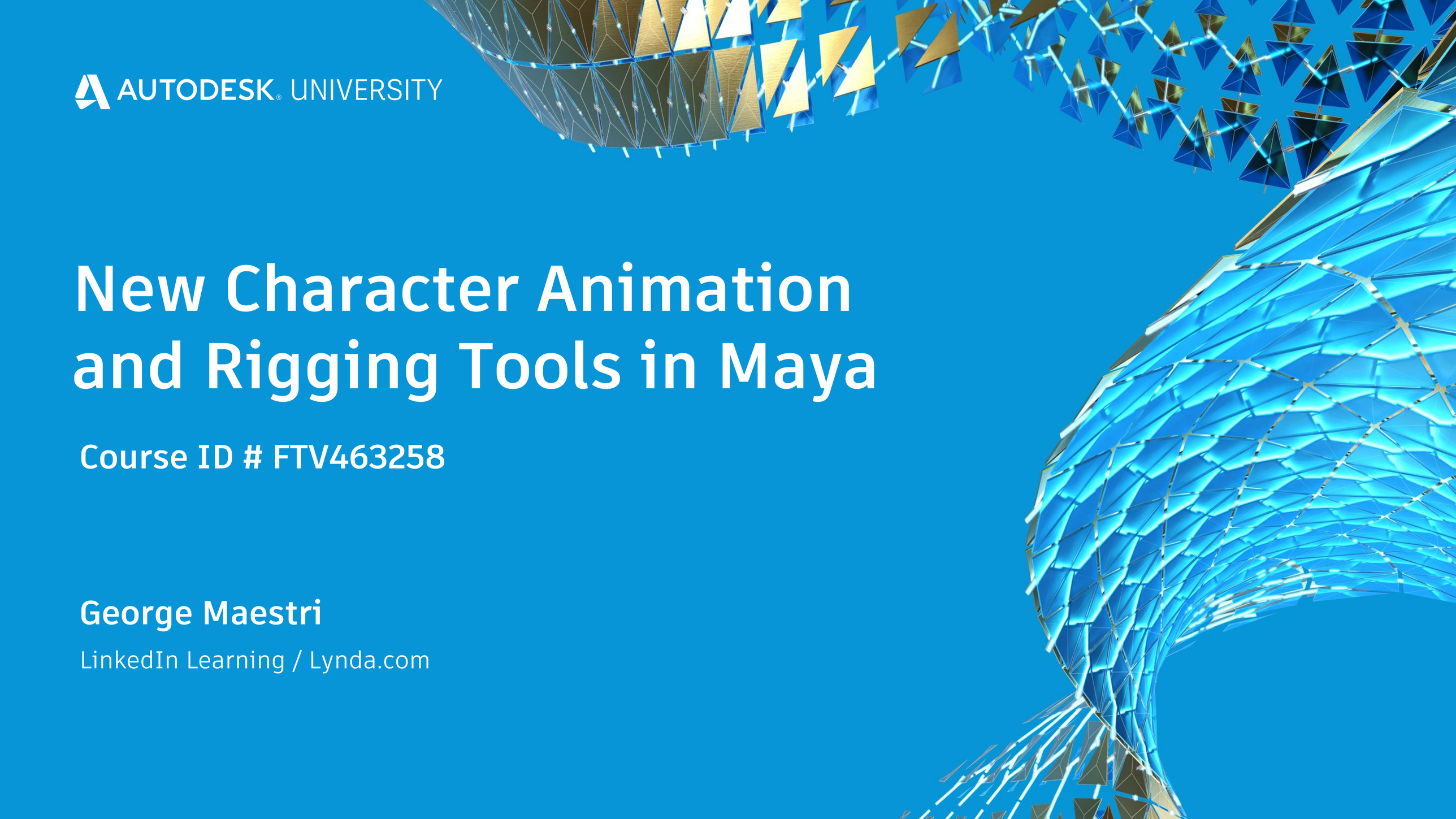
New Character Animation and Rigging Tools in Maya

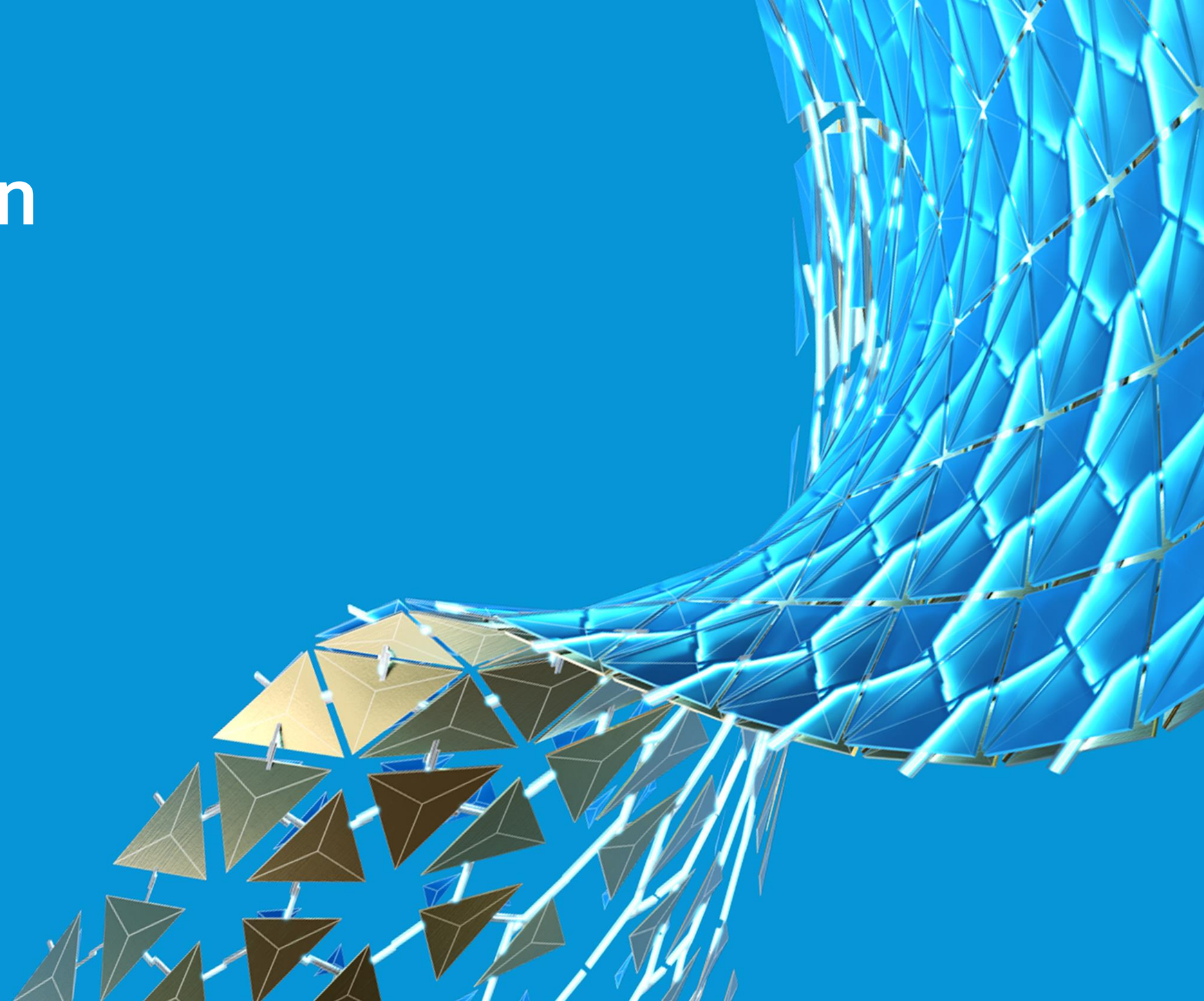
Course ID # FTV463258

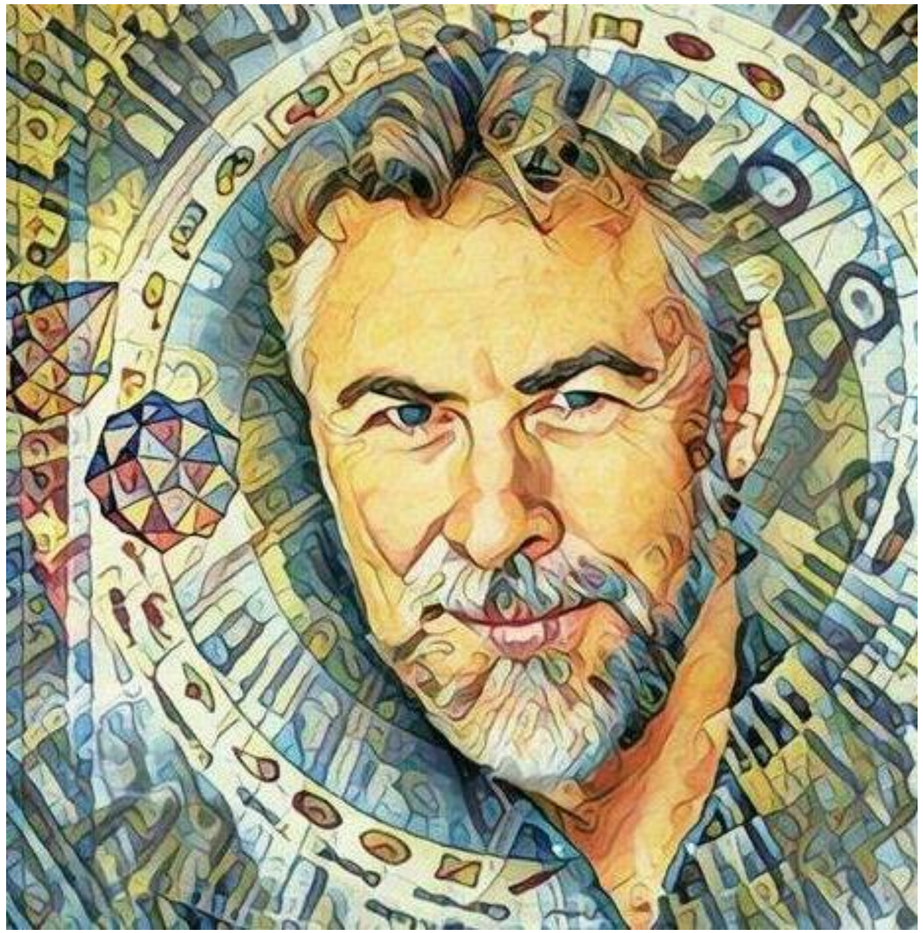
George Maestri

LinkedIn Learning / Lynda.com



Introduction





About the speaker

George Maestri

Animation industry veteran with almost 3 decades of experience.

Writer/Director/Producer/Animator/Rigger/Sheet Timer/Teacher/Cel Painter.

Currently teaches at LinkedIn Learning.

Previously Faculty at Cal Arts, Otis College of Art

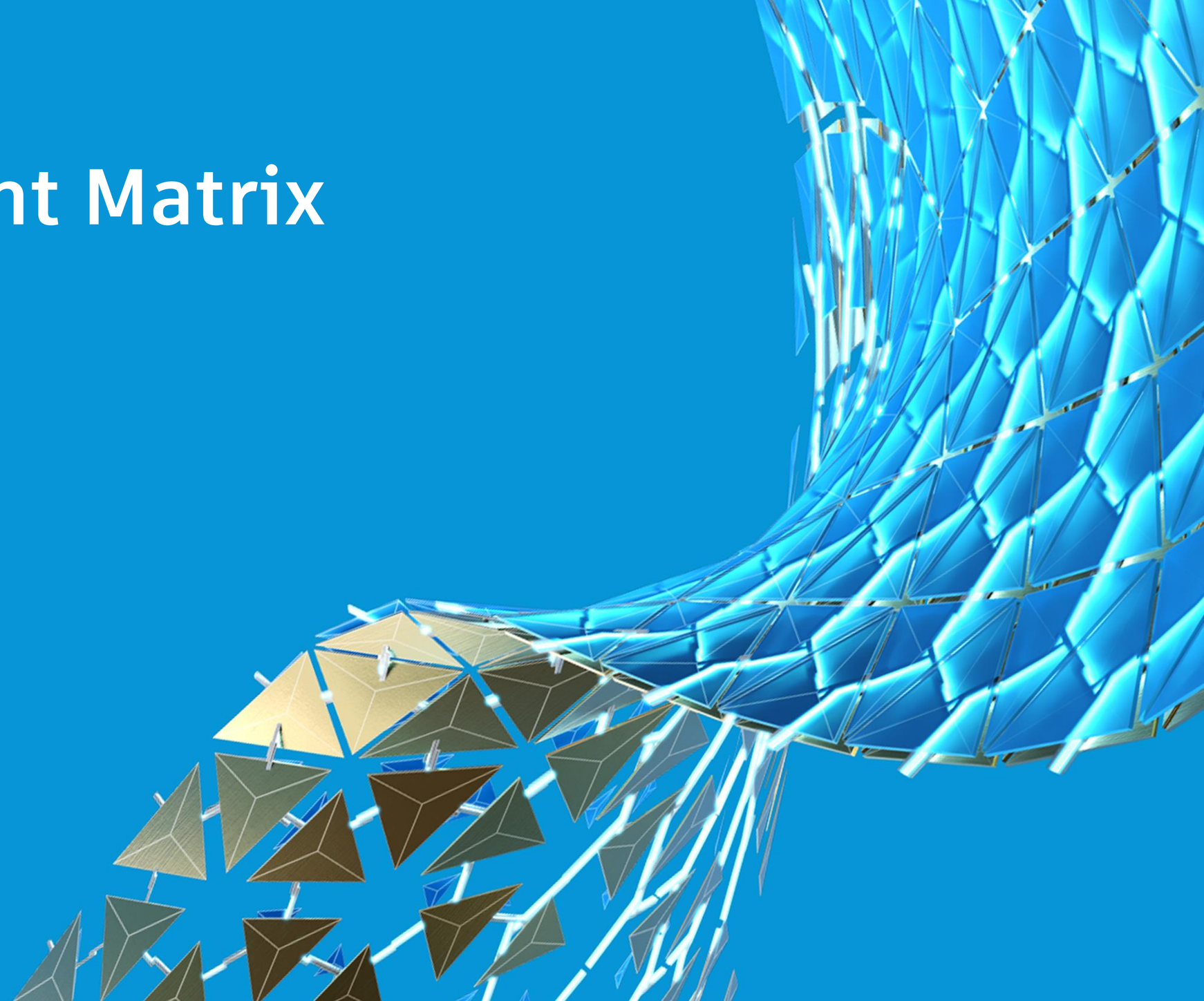
Published 12 books on Animation and CGI

Outline

Maya 2020 introduced many new character tools, some which change the way rigs will be built.

- **Offset Parent Matrix**
  - About Matrices
  - How to Use Matrices
  - Rigging with OPM
- **Pinning Tools**
  - Rivet / Proximity / UV Pin
- **Proximity Wrap**
- **Animation Interface Stuff**
  - Time Slider / Graph Editor
- **Cached Playback**

Offset Parent Matrix



Offset Parent Matrix

Offset Parent Matrix

The MOST IMPORTANT rigging feature of Maya 2020.

Offset Parent Matrix

The MOST IMPORTANT rigging feature of Maya 2020

- Adds a second transform node (OPM) to objects/nodes
- Simplifies rigging
- Fewer Constraints
- Frees up channel box
- Faster!

Offset Parent Matrix

It will change the way you rig.

What is a Matrix

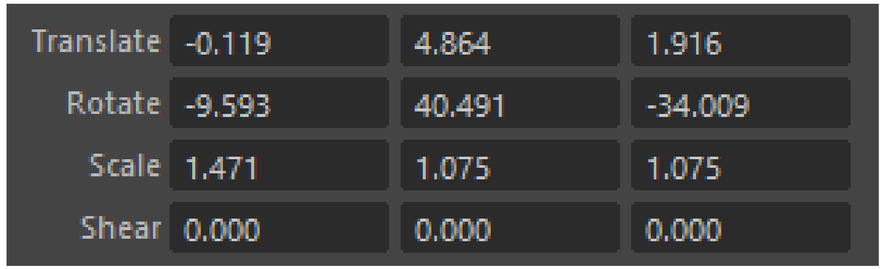
What is a Matrix

A matrix is how Maya represents data internally.

It can store standard attributes such as position, rotation, scale.

What is a Matrix

The attributes in the channel box/attribute editor can be represented as matrices.



Attributes

What is a Matrix

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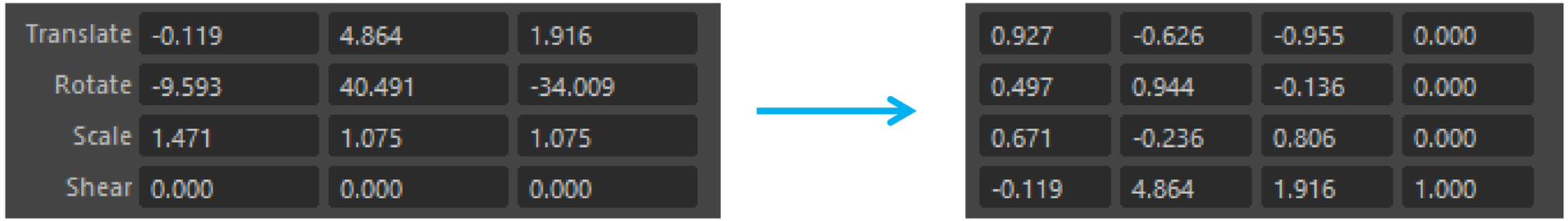

Attributes

Matrix

What is a Matrix

Transforming an object in Maya is done internally via matrix multiplication

(0,0,0)

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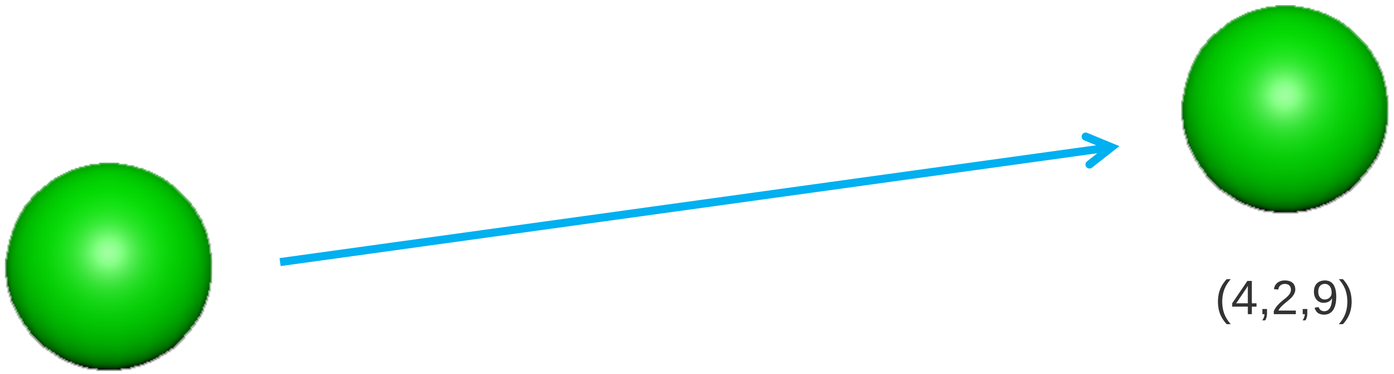

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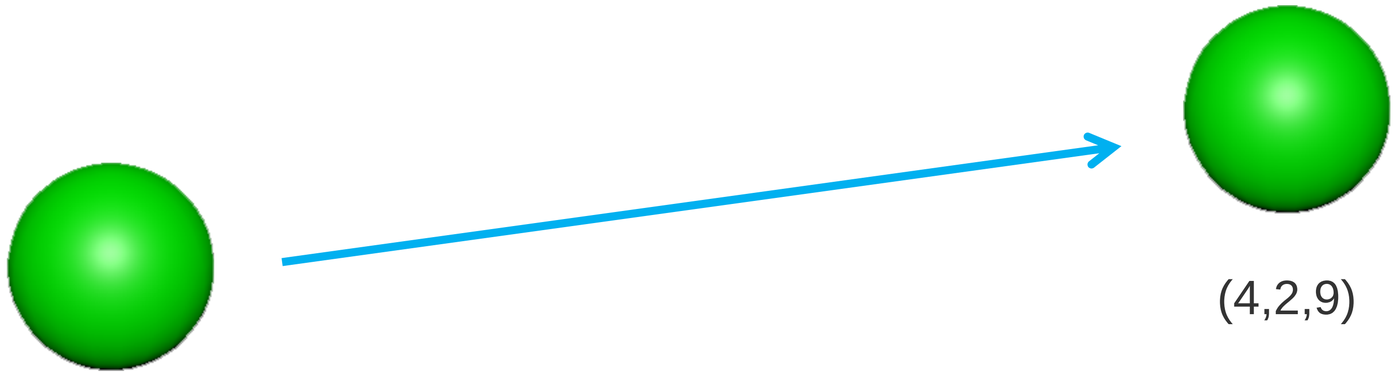


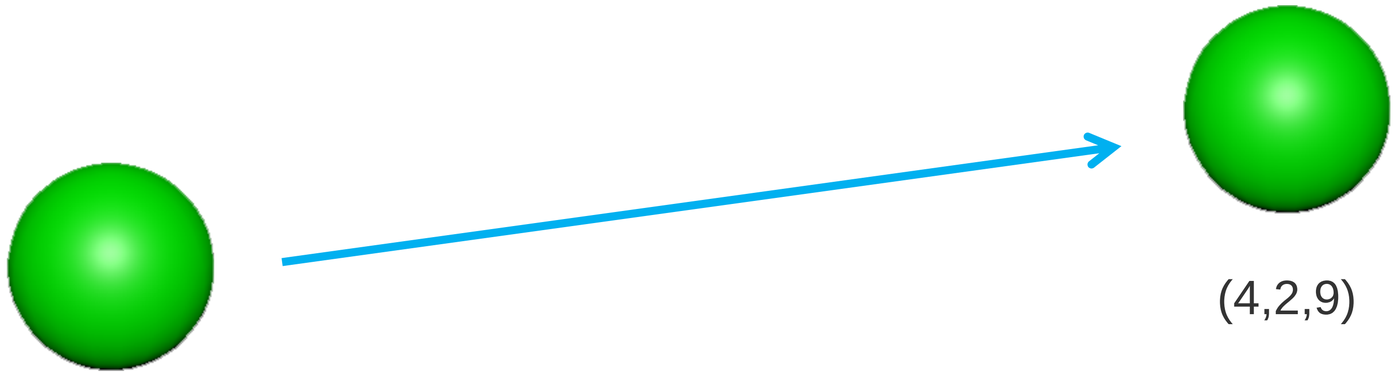
(0,0,0)

(4,2,9)

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

What is a Matrix

Transforming an object in Maya is done internally via matrix multiplication



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(4,2,9)

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \times \begin{bmatrix} X & X & X & X \\ X & X & X & X \\ X & X & X & X \\ X & X & X & X \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 4 & 2 & 9 & 1 \end{bmatrix}$$

Transform matrix

What is a Matrix

Matrices are the foundation of all 3D operations.

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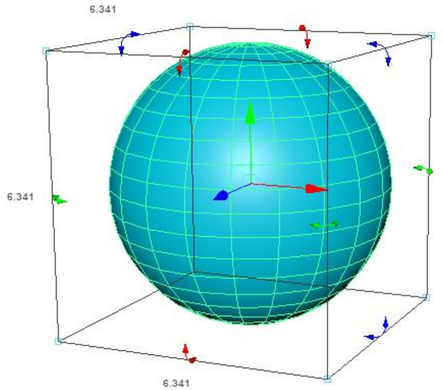
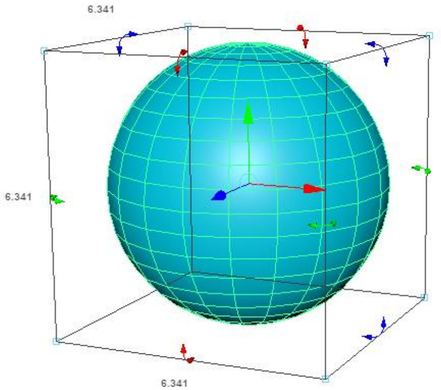
Move, rotate, scale



What is a Matrix

Matrices are the foundation of all 3D operations.

- Move, rotate, scale
- Animation



What is a Matrix

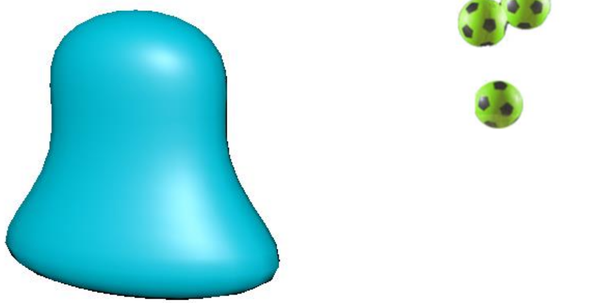
Matrices are the foundation of all 3D operations.

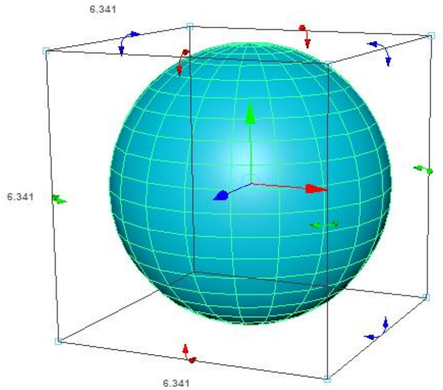
Move, rotate, scale

Animation

Deformations

...more





Offset Parent Matrix

Offset Parent Matrix

Basically just an additional matrix that can be used for 3D operations

Is applied BEFORE standard Position/Rotation/Scale

Can be thought of as a second transform node.

(MAYA DEMO)

Constraints

Constraints

Used a lot in rigging

Constraints

Used a lot in rigging

Have issues

- Lots of messy connections
- Slow
- Tie up the channel box

Offset Parent Matrix as Constraints

The new preferred method

Fewer connections

Fast

Free up Channel Box

(MAYA DEMO)

Offset Parent Matrix

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Changes the world space of objects with out the need for additional nodes.

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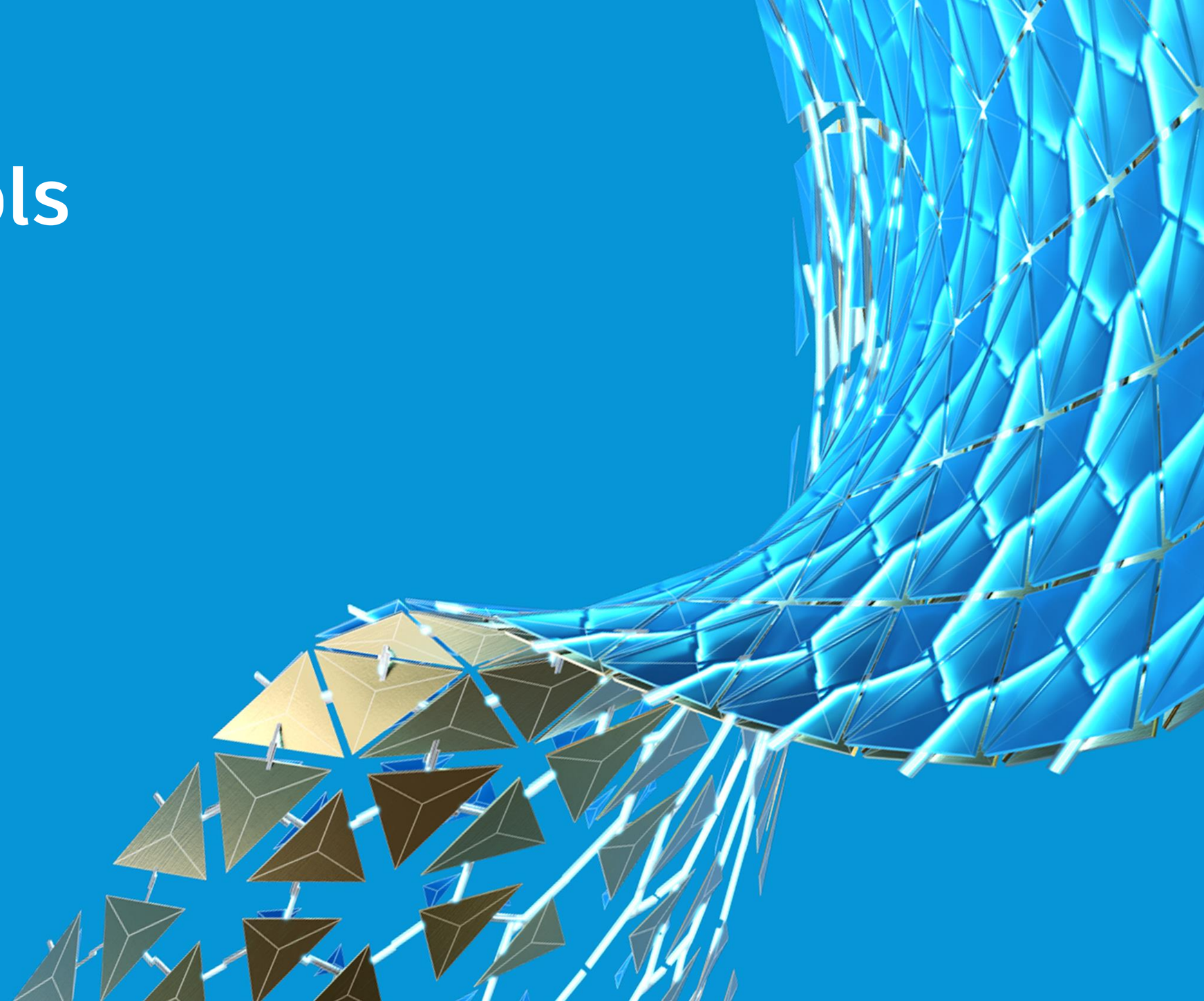
Can streamline rigs.

Is faster.

Allows for many new ways to rig.

(MAYA DEMO)

Pinning Tools



Pinning Tools

Three tools that attach objects and/or locators to deforming geometry.

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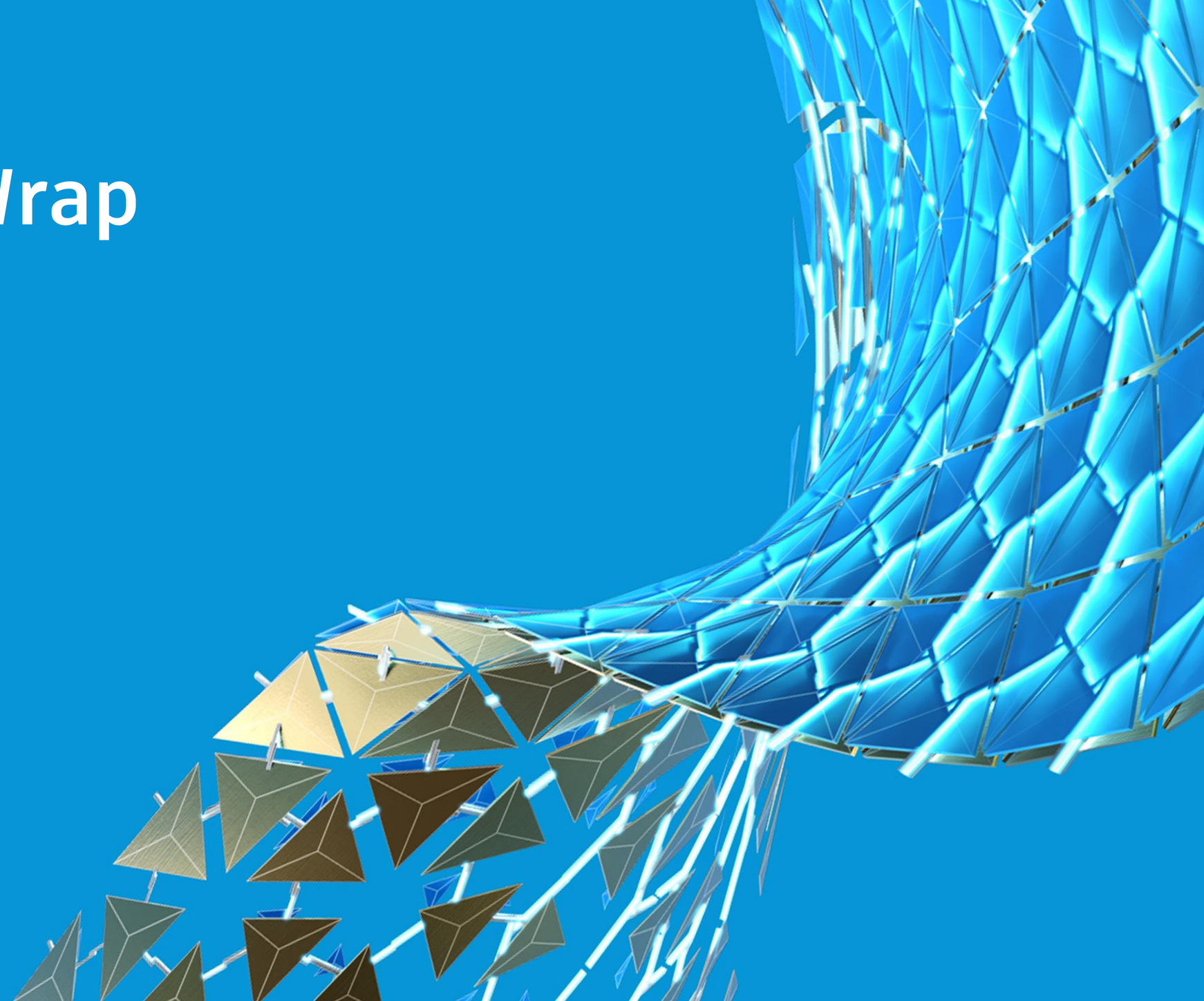
Proximity - Attaches to surface by location/proximity

UV Pin – Attaches to surface by UV coordinates

Rivet - Attaches to components

(MAYA DEMO)

Proximity Wrap



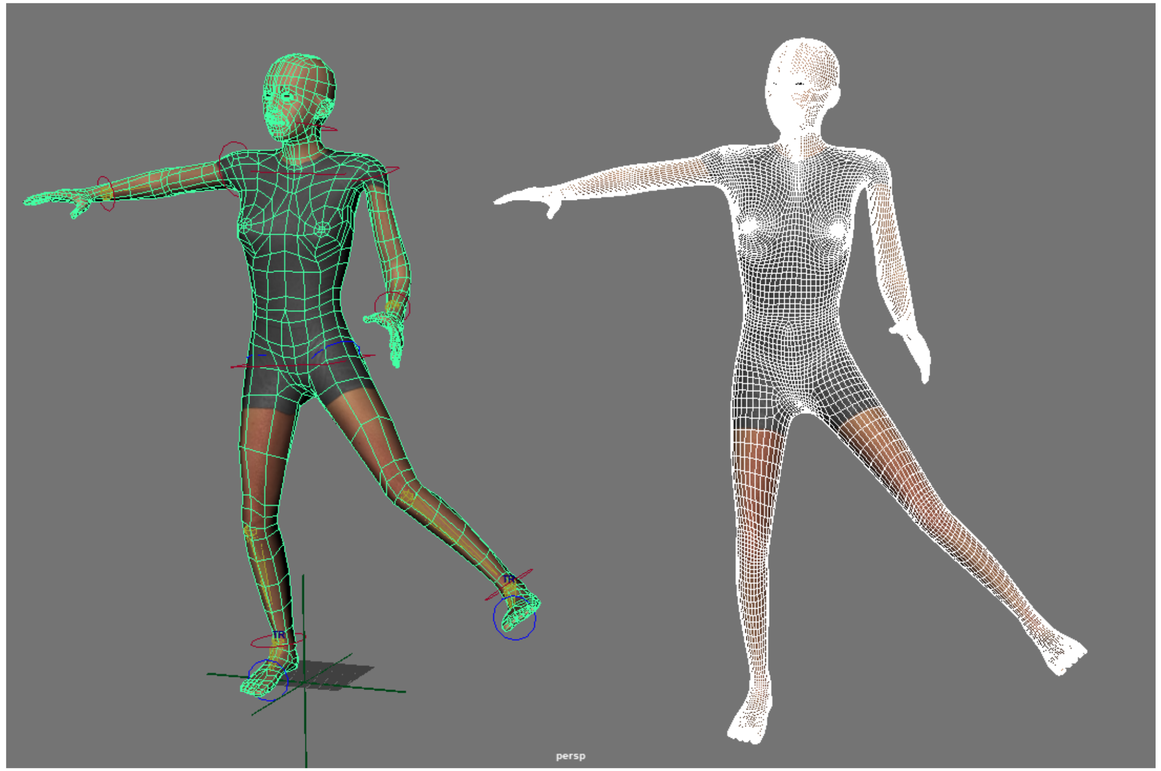
Proximity Wrap

Allows low-res geometry to deform high-res geometry.

Great for animating high-res characters using low-res proxies.

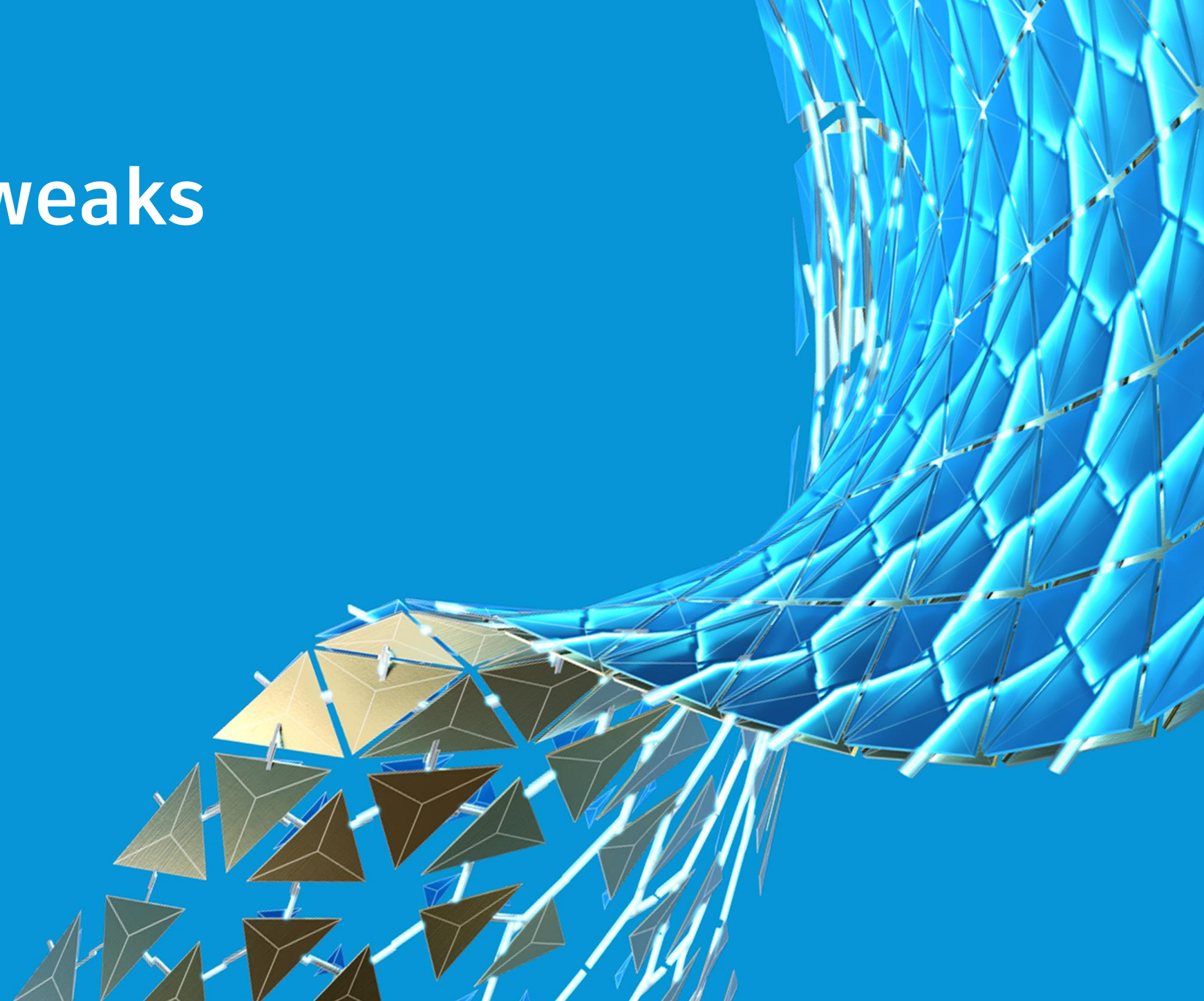
Not pose-dependant

GPU Accelerated for speed.



(MAYA DEMO)

Interface Tweaks



Interface Tweaks

Timeline bookmarks

Graph Editor

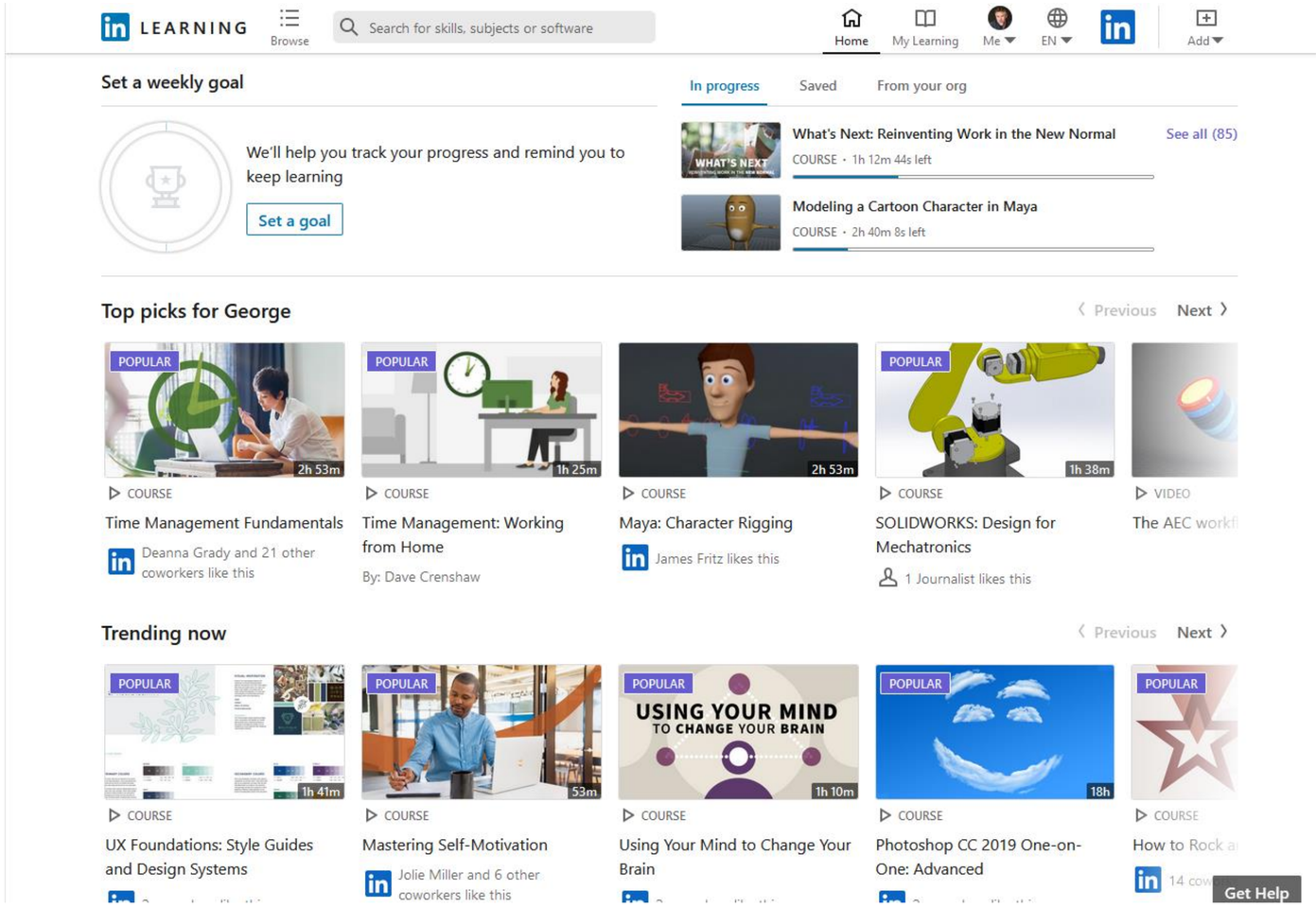
Cached playback.

(MAYA DEMO)

Thanks!

Thanks!

Thanks!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