Rigging Tools

John Harrison

https://01.org/rigging-tools
https://github.com/intel/riggingtools
Rigging Tools

Rigging?!

Rigging is a technique in computer animation in which a character (or other articulated object) is represented in two parts:

- **skin**
  - also called “mesh”
  - the part of animation we see
- **rig**
  - also called “skeleton”
  - interconnected and hierarchical
  - the part of animation that drives structure and movement
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Skeletons

Animators and mocap systems generate skeletal data as proper rigs

- Hierarchical
- Large number of joints
- Generally smooth motion
- Well-defined rest pose
- Relative rotations
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Skeletons

Skeletal data generated by deep learning and depth cameras are merely points in space and are not easily rigged

- Disordered
- Limited number of joints
- Generally noisy motion
- No defined rest pose
- Absolute points
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collection of SW tools

that bridge the gap

between

3D skeletal data

and

animation
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Target audience

- Animators
- App Developers
- Game developers
- Data Scientists
- SW Engineers
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What these tools do

- Convert 3-dimensional keypoints into well-defined and kinematically-correct animatable rigs
- Package rigs into files for archival, sharing, or Internet streaming
- Provide APIs for using rigs in code, scripts, game engines, and animation software
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What these tools *don’t* do

- Generate 3D keypoints from images, videos, or depth cameras
- Package skins
  - This can be done in animation software or game engines
- Output to various formats (fbx, gltf, ply…)
  - A variety of output formats are supported by using animation software
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Details

Open-sourced, 01.org

Good documentation in github:

- Build instructions
- “How to” with use cases
- Definitions for input data and output rigs
- Useful diagrams
- Sample code

About

This is a collection of tools bridging the gap between 3D skeletal keypoints and anything that consumes them.

The term "rig" is used to define the underlying structure of anything animatable, including humans skeletons, balls
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Diagrams

Speaking of diagrams...

This is helpful when determining which tools you need

Start at the top and trace a path to your destination at the bottom - tools along the path are the ones you will need
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kp2rig

kp2rig (short for “keypoints to rig”) is the only server-side tool and perhaps the most important. It is the tool that takes points in space and creates hierarchical rig files.

Rig files are JSON files. Data is compressed and then base64-encoded.

Because of this compression and encoding, rig files are not easy to read.
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rig2<platform>

rig2c, rig2cs, rig2blender… are all ways to read rig files

They provide APIs and scripts into various technologies

Much of the code is shared and just compiled and packaged differently