

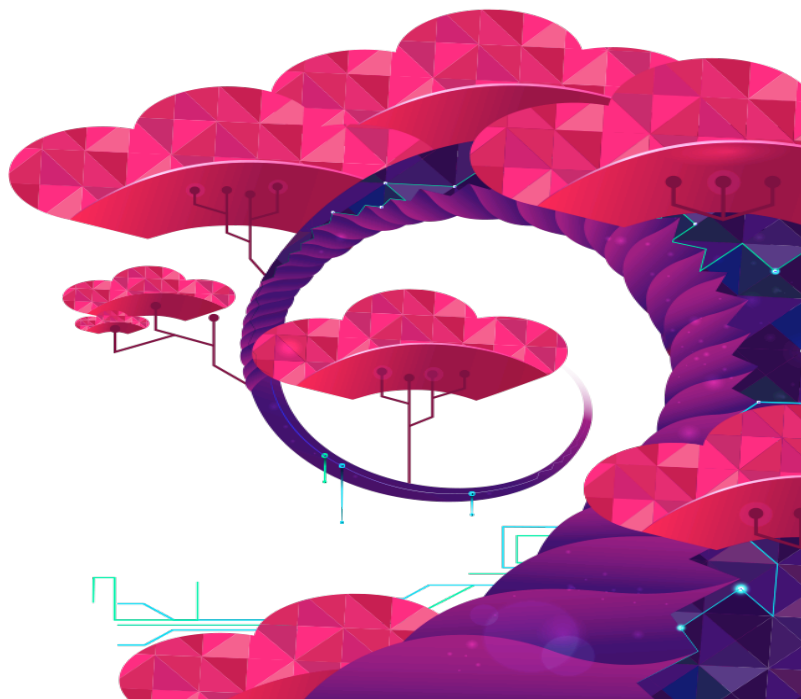
AniMesh: Interleaved Animation, Modeling, and Editing

Ming Jin, **Dan Gopstein**,
Yotam Gingold, Andy Nealen

Sponsored by

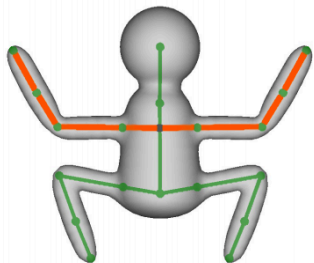


SIGGRAPH
ASIA 2015
KOBE

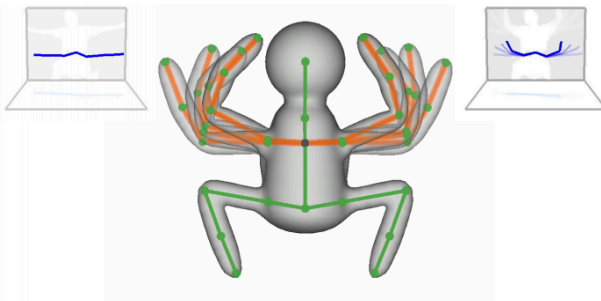


AniMesh in a Nutshell

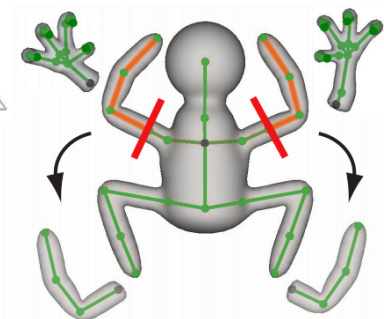
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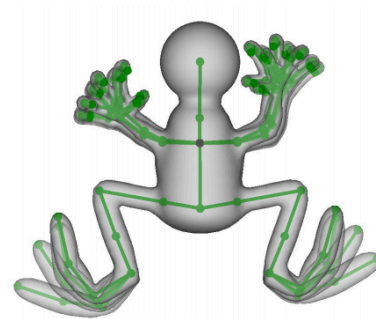
Animate



Edit



Playback





Contributions

- Skeletal Co-abstraction
 - for source-target mapping
- Motion Retargeting
 - for animation preservation

Traditional Workflow



Human-centric design

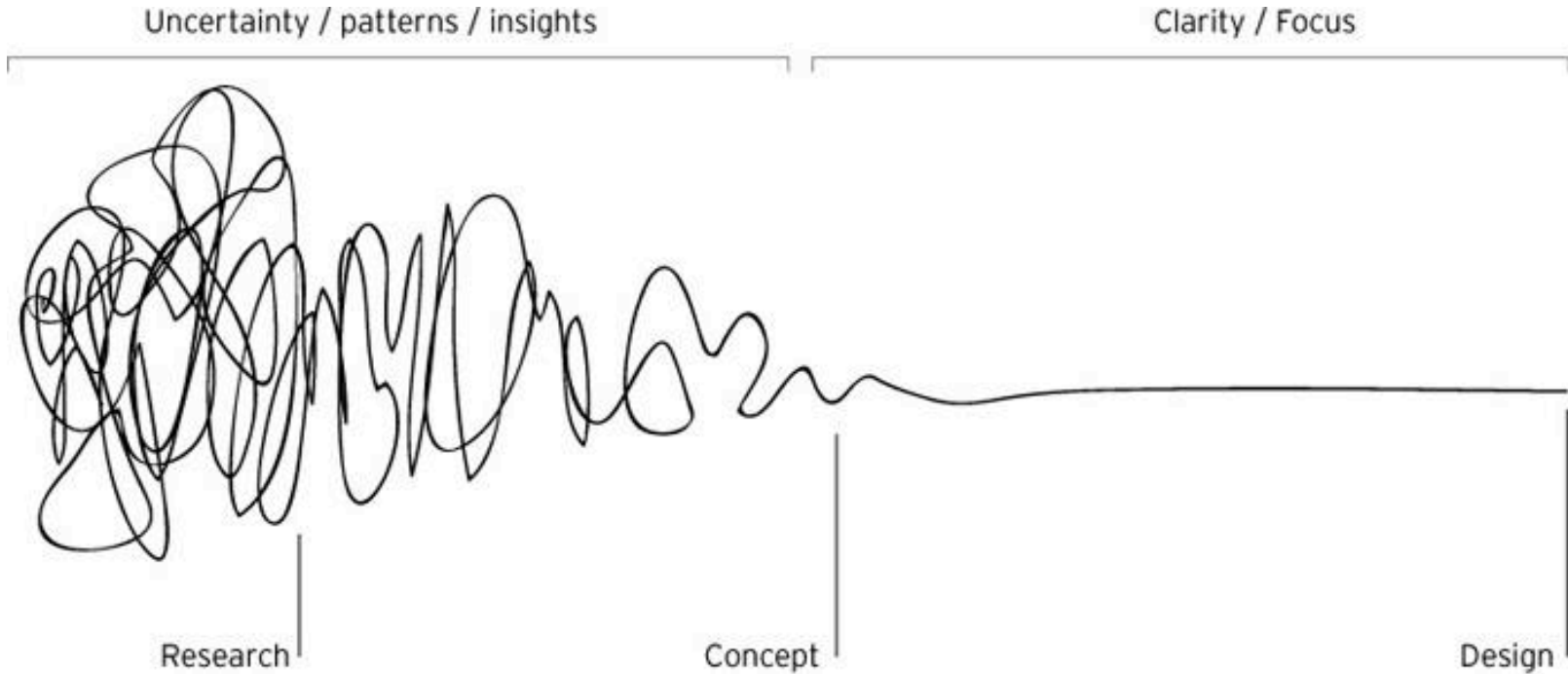
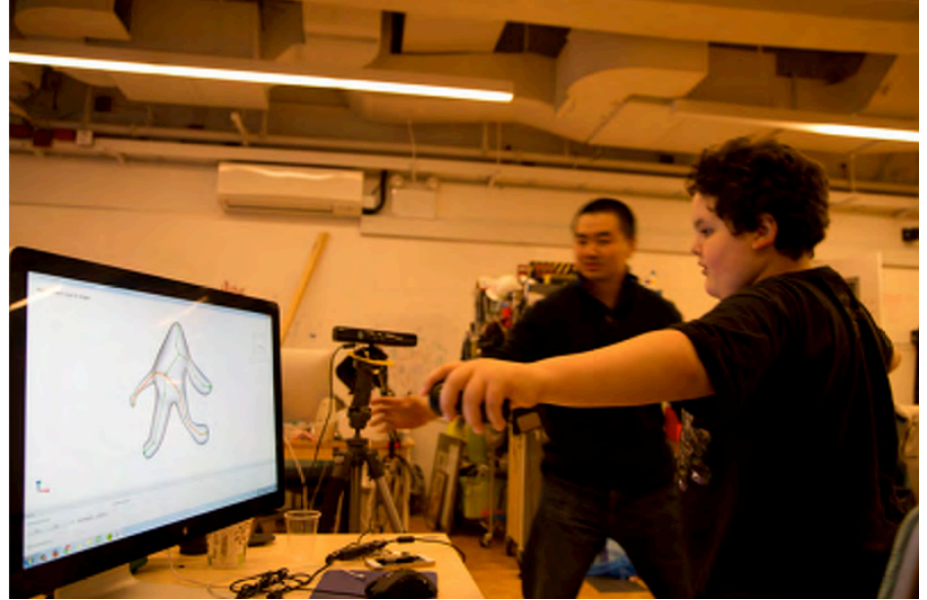
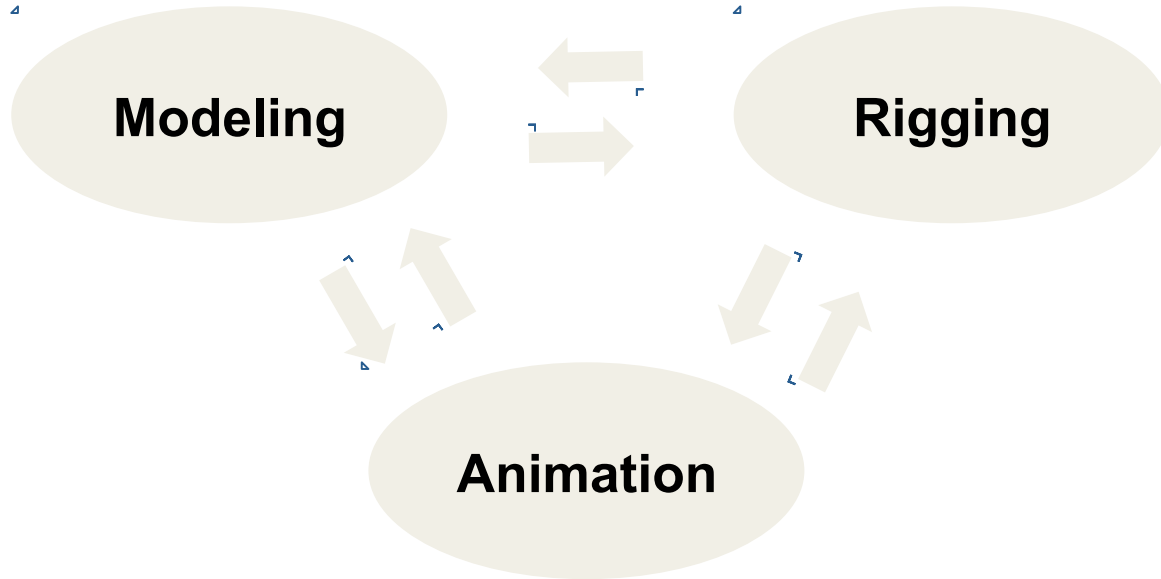


IMAGE BY DAMIEN NEWMAN, CENTRAL OFFICE OF
DESIGN. [HTTP://V2.CENTRALSTORY.COM/ABOUT/
SQUIGGLE/](http://v2.centralstory.com/about/squiggle/)

Our Design Goals

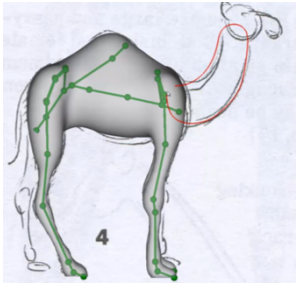


An Alternative Workflow



AniMesh Pipeline

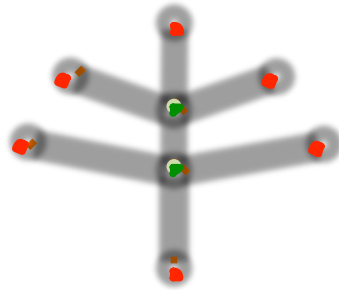
Modeling



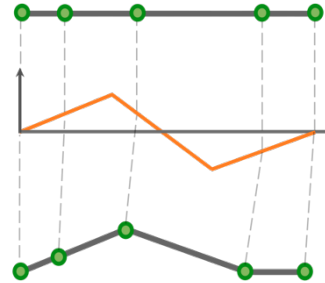
Motion
Capture



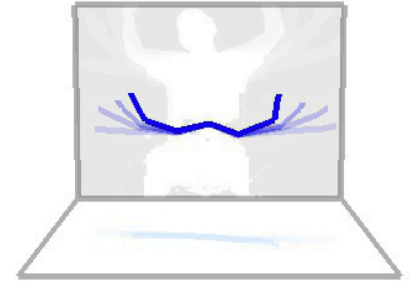
Skeletal
Co-abstraction



Motion
Retargeting

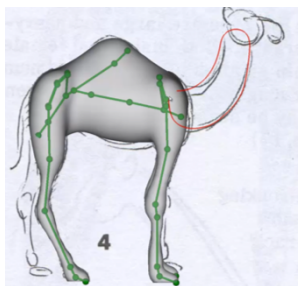


Separation of
Transformations



AniMesh Pipeline

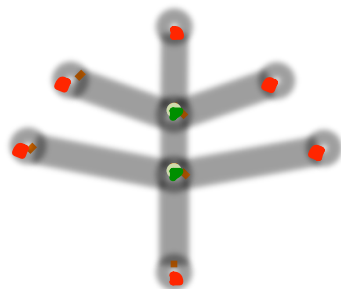
Modeling



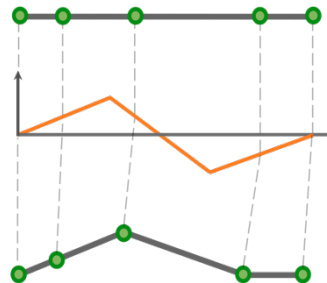
Motion
Capture



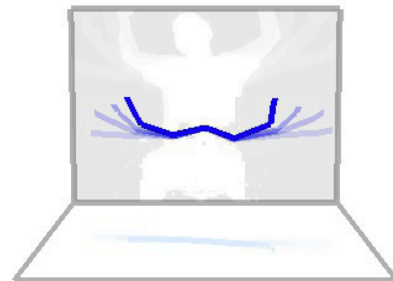
Skeletal
Co-abstraction



Motion
Retargeting



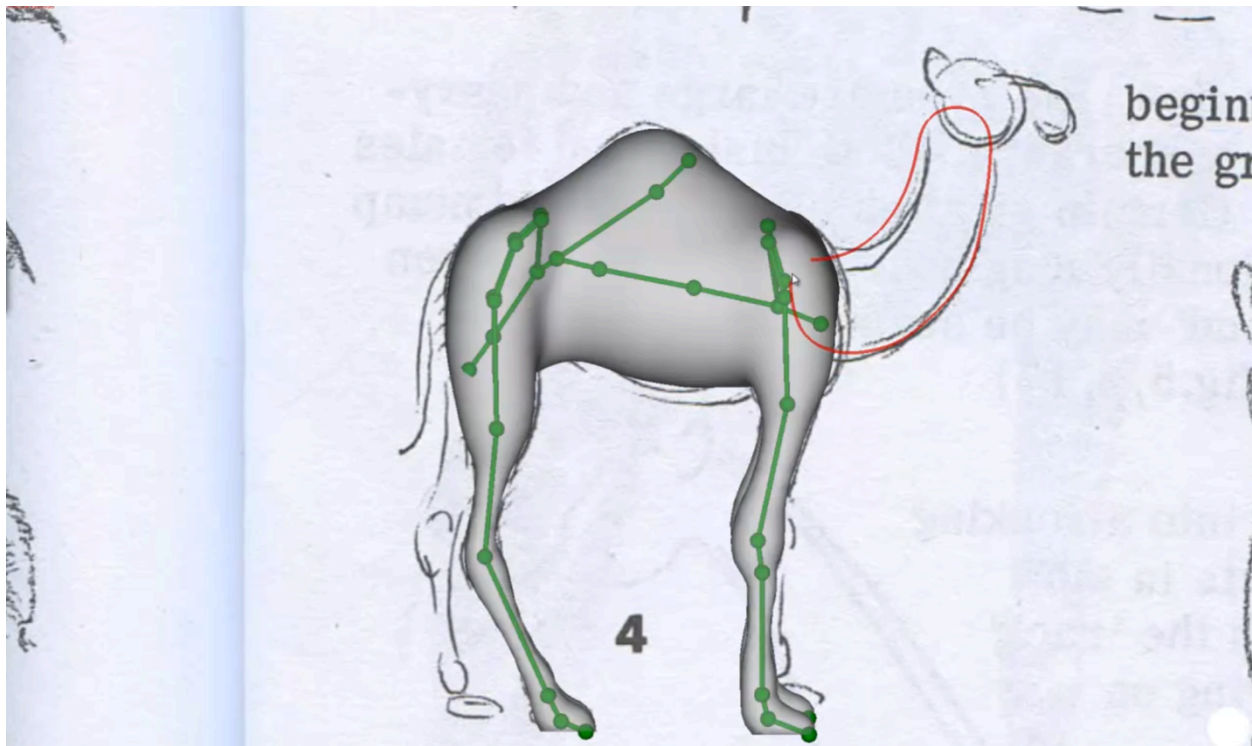
Separation of
Transformations



Sketch-based Modeling

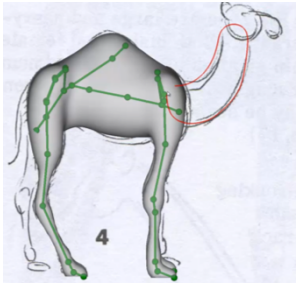
RigMesh

SIGGRAPH Asia 2012



AniMesh Pipeline

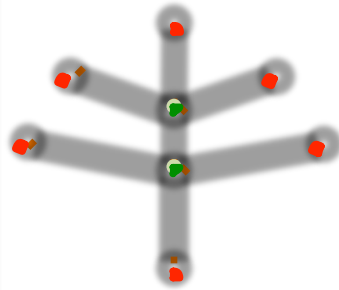
Modeling



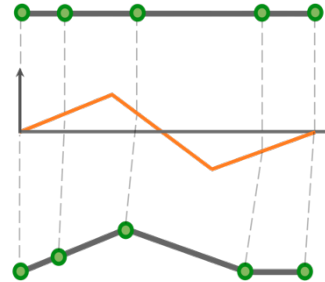
Motion
Capture



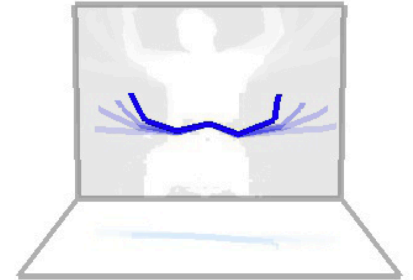
Skeletal
Co-abstraction



Motion
Retargeting



Separation of
Transformations



Motion Input Sources

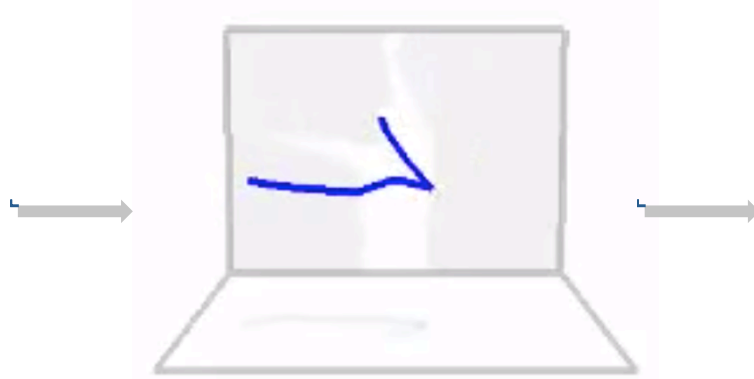


Sub-skeleton Selection

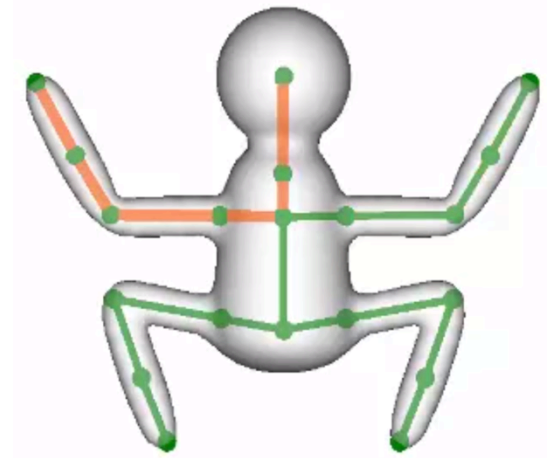
User Poses



Capture Geometry

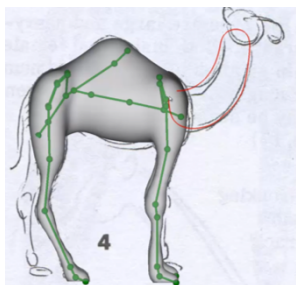


Match to Model



AniMesh Pipeline

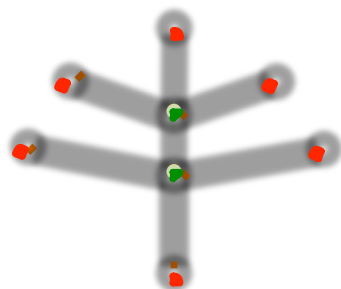
Modeling



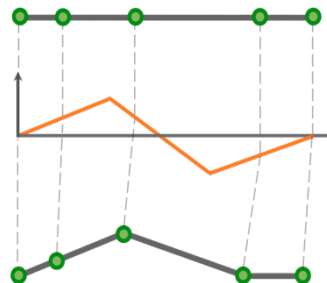
Motion
Capture



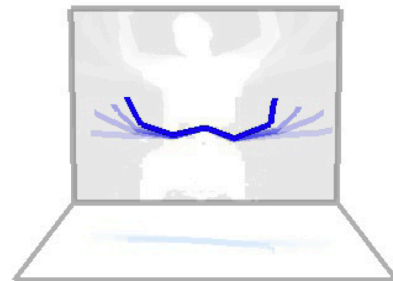
Skeletal
Co-abstraction



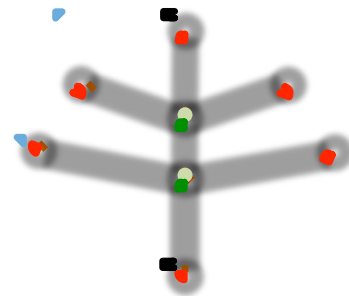
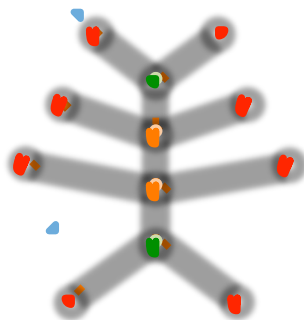
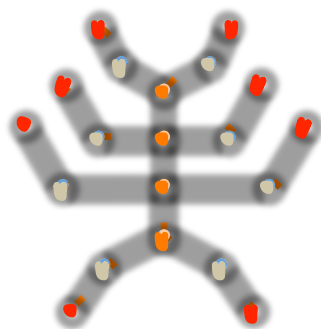
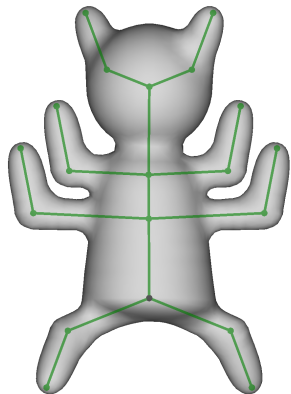
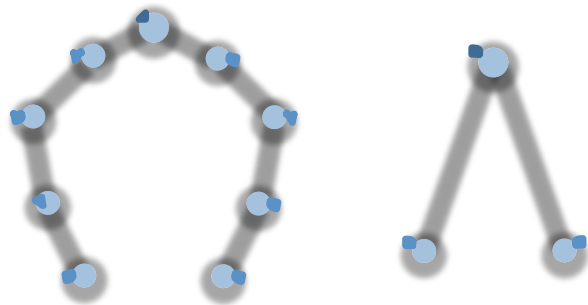
Motion
Retargeting



Separation of
Transformations

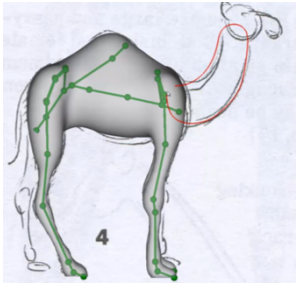


Hierarchical Skeleton Abstraction



AniMesh Pipeline

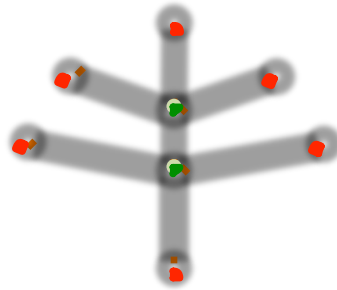
Modeling



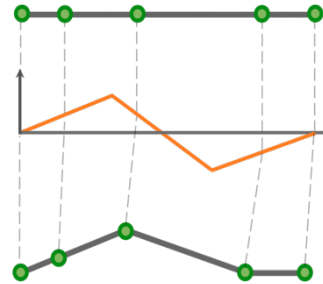
Motion
Capture



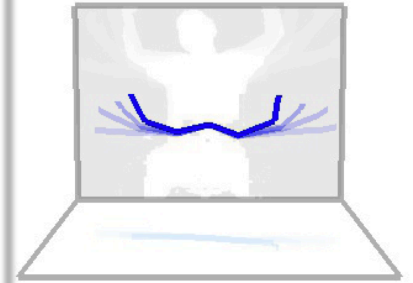
Skeletal
Co-abstraction



Motion
Retargeting

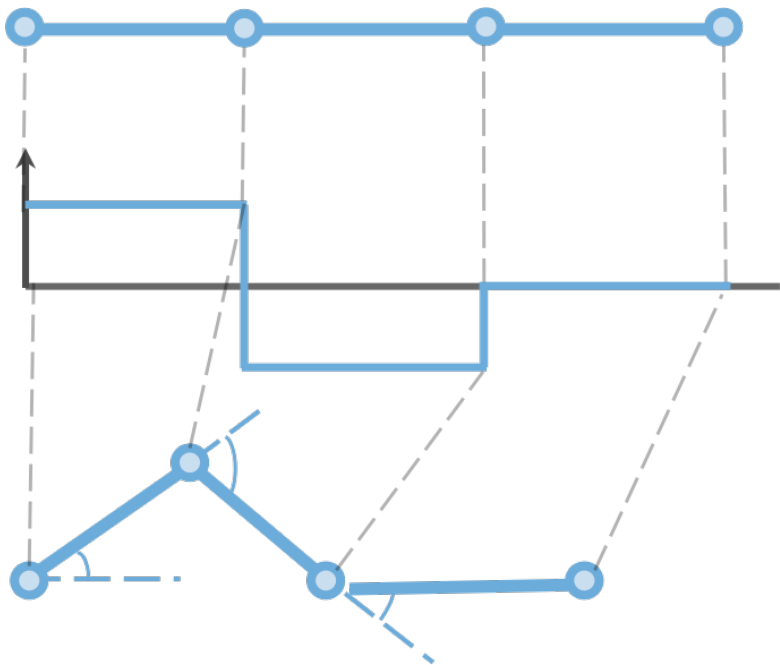


Separation of
Transformations

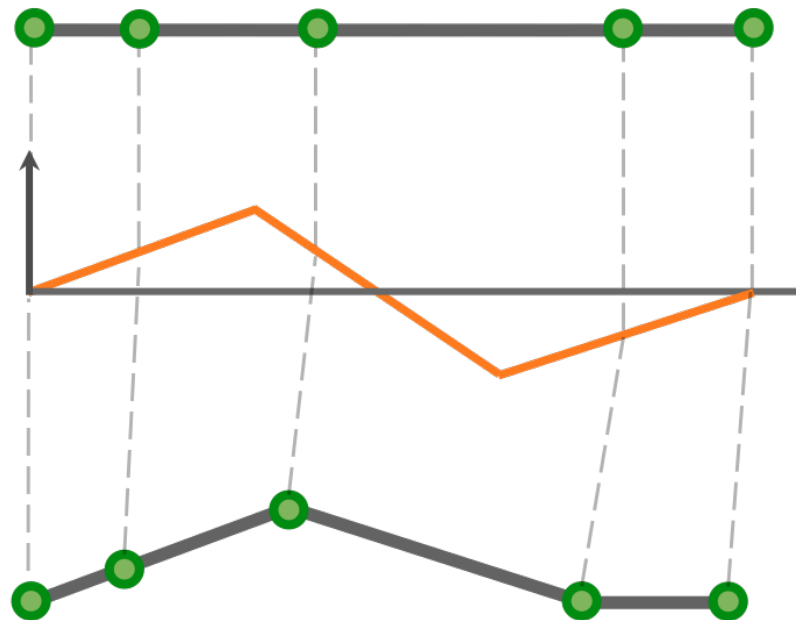


Motion Retargeting

Source

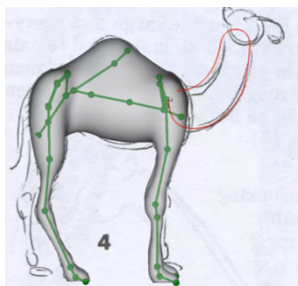


Target



AniMesh Pipeline

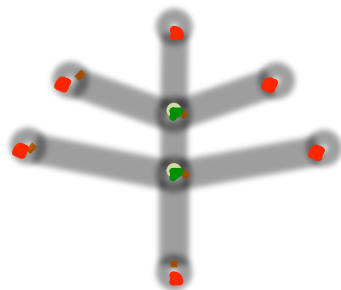
Modeling



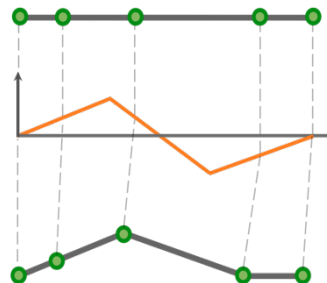
Motion
Capture



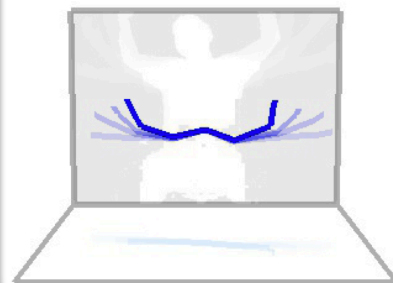
Skeletal
Co-abstraction



Motion
Retargeting

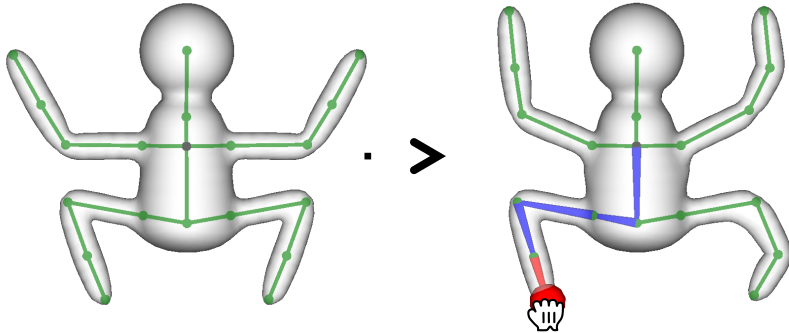


Separation of
Transformations

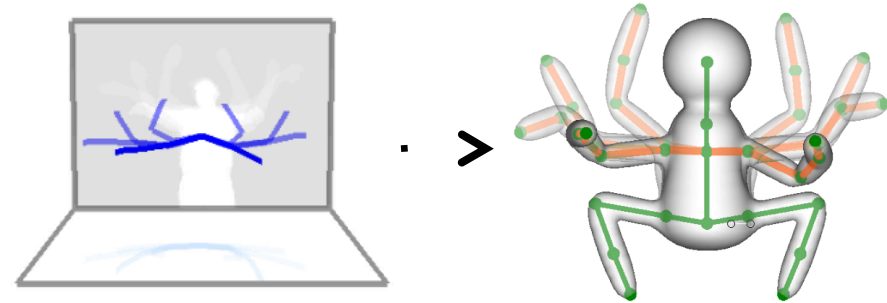


Separation of Transformations

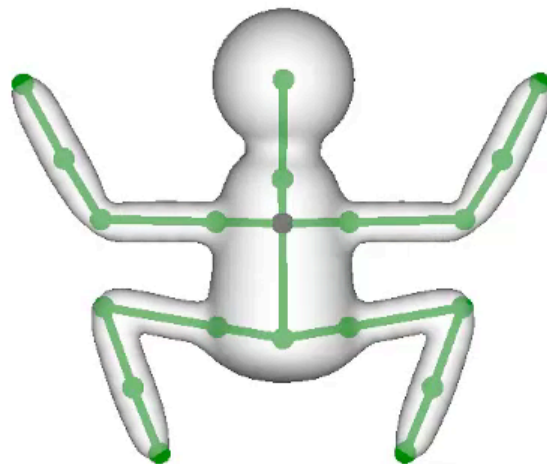
Modeling transformations



Performance transformations



Animation playback



Controls

Animation Controls

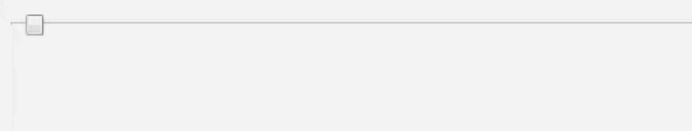
Loop

00:00:00:454

Max animation time:

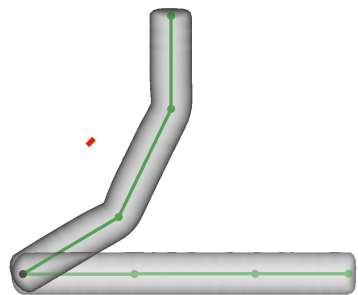
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Animation timeline

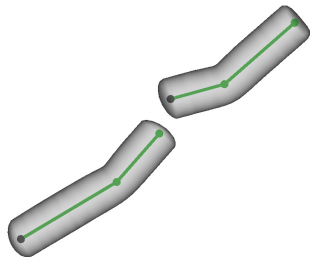


Cut/Merge Handling

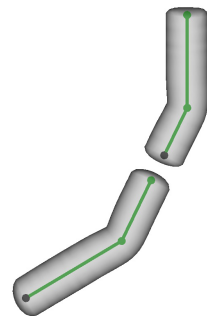
Cut



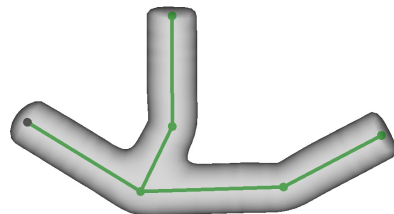
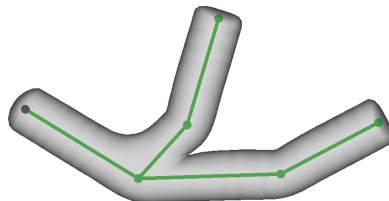
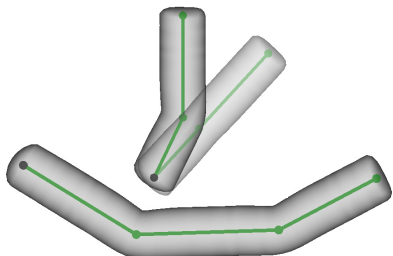
Unnatural



Natural



Merge



Motion preserving shape editing

Interleaving modeling and animation for complex scenes

Results from first-time users

- Natural Interfaces
 - Easy for novices
- Non-destructive edits
 - Allows exploration
- Interleaved pipeline
 - Promotes iterative design

Thank You