AniMesh: Interleaved Animation, Modeling, and Editing

Ming Jin, Dan Gopstein, Yotam Gingold, Andy Nealen
AniMesh in a Nutshell

Select  Animate  Edit  Playback
Contributions

• Skeletal Co-abstraction
  - for source-target mapping

• Motion Retargeting
  - for animation preservation
Traditional Workflow

Modeling → Rigging → Animation
Human-centric design
Our Design Goals
An Alternative Workflow

Modeling ↔ Rigging

Animation
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
Cut/Merge Handling

Cut

Unnatural

Natural

Merge
Motion preserving shape editing
Interleaving modeling and animation for complex scenes
Results from first-time users
Recap

• Natural Interfaces
  - Easy for novices

• Non-destructive edits
  - Allows exploration

• Interleaved pipeline
  - Promotes iterative design
Thank You