

CIS 510 Homework 5 - Submission 1

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Study each of the following deformer and summarize what you learn by answering the following questions:

- What are the benefits/disadvantages of each? (When use one deformer over another?)
- Is there benefit in using them in combination (e.g., in series and parallel, or globally versus locally, etc.)? How does one combine them and get them to ‘play nice’?
- What are the ‘best practices’ used by the facial animation community for using deformer to model faces and expressions?

Blend Shapes - Jacob

Blend shapes allow transformation between different shapes with the same number of vertices, given that you define a mapping between vertices of the different shapes. For example, blending a torus into a coffee cup.

Blend shapes are ideal for linearly deforming between multiple pre-defined shapes. For assignment 5, blend shapes could be used to transform between expressions, for example smiling to frowning.

Cluster Deformers - Jacob

Cluster deformer act on a set of control vertices (CV’s), polygonal vertices, or lattice points. Each point within the set also has an associated weight. The weight determines how much the vertex is modified when the cluster set is translated, rotated, or scaled.

Cluster deformer are ideal when you want to deform related vertices in a non-uniform manner. For assignment 5, cluster deformer could be used to create different facial topologies, for example a smiling face, or a face with the eyebrows raised.

Texture Deformers - Jacob

Wire Deformers - Areej

Wire deformers allow the shapes of deformable objects to be changed using one or multiple NURBS curves. Wire deformers can be created with or without holders. Holders are curves used to specify the limits of the deformation region. Wire deformers are most useful for deforming the lips, mouth and eyebrows. For assignment 5, wire deformers could be used to deform the chernoff face's lips and eyebrows.

Wrap (and Lattice) Deformers - Areej

Wrap deformers allow us to manipulate objects that have NURBS surfaces, NURBS curves, or polygonal meshes. Lattice deformers uses a lattice placed around a deformable object to manipulate the shape of the object by moving, rotating, or scaling the lattice structure. Deformable objects are objects with NURBS control vertices (CVs), polygonal vertices, or lattice points. For assignment 5, we could use lattice deforms to manipulate lattice object that is on top of the two eyebrows.

Muscle Deformers - Areej

Point on Curve Deformers - Areej

Influence Objects - Jacob