Animation

CSC 292:
Computer Graphics

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Applications

- Flight simulators
- Interactive computing
- Scientific visualization
- Entertainment industry
- Advertising

Conventional (Key-frame) Animation

- Storyboard.
- Soundtrack.
- Key frames.
- Inbetweening.
- Copying and coloring.
- Filming.

Computer Assistance

- Coloring (fill algorithms).
- Smoothing and cleaning of hand drawings (hard).
- Interpolation for inbetweening.
  - Linear on vertices or control points.
  - Splines used similarly.
  - Skeleton techniques.
- 3D interpolation.
  - Spline through Cartesian positions.
  - Quaternian representation for orientation.

Simple Effects

- Pan-Zoom technique.
- Lookup table methods.
- Combinations.
- Sprites.

Animation Languages

- Lots of them.
- Linear-List notations - list of actions and frames.
- General-purpose languages - various routines called within general programming framework.
- Graphical languages - graphical interface tools (paths, pointing etc.).
- Key-framing editors.
- Combinations.

Controlling Animation

- Full explicit control.
- Tracking live action.
- Procedural control (limited communication).
- Constraint-based systems.
- Physics and dynamics (try to apply real-world constraints).
- Actors (high-level interacting agents).

Problems

- Very high resource requirements (especially for interactive real-time).
- Temporal aliasing.
- Taking advantage of 4D coherence.