Course objectives

- Understanding of Fundamentals of Computer Graphics as they pertain to 3D Game Design.
- Awareness of the different approaches and priorities assigned to Game Design vs. interactive 3D visualization
- Experiencing the complexity of 3D Game Design using a commercially available Game Engine
- Exploring the future of 3D Gaming with respect to the man-machine interface
Priorities (System)

**Scientific Visualization**
1. Accuracy & Precision
2. Performance & Interactivity
3. Extensibility
4. Platform independence
5. Cost
6. Robustness
7. Ease of use

**Game Design**
1. Performance & Interactivity
2. Cost
3. Robustness
4. Ease of use
5. Platform independence
6. Configurability
7. Accuracy & Precision
Priorities (API)

Scientific Visualization
1. High-level abstraction
2. Extensibility
3. Standardization
4. Platform independence

Game Design
1. Low-level optimization
2. Platform independence
3. Extensibility
4. High-level abstraction
Priorities (Computer Graphic)

Scientific Visualization
1. Particle visualization (data clouds, behaviors, etc.)
2. Information visualization
3. Interaction
4. Texture mapping

of large multi-dimensional data sets

Game Design
1. Geometry Visualization
2. Illumination
3. Texture Mapping
4. Interaction
5. Special Effects

of limited polygonal data sets
Instructors’ objectives

“Innovators with truly clever ideas…”

That’s me😊

“…have no choice but to become educators and trainers.
They need to recognize that to overcome customers’ resistance, they must marry ease of use with ease of learning.”

*Michael Schrage, MIT Technology Review, Dec02/Jan03*
Instructors’ objectives

We need CG experienced students to help us with this challenge!!

- Application areas include
  - Medical visualization (UNO/PKI)
  - Underwater acoustic visualization (NUWC)
  - Human/System Integration (Anteon)
  - Mixed Realities (RISD)
  - Education & Training (WHOI)
  - …
Vehicles for student involvement

- Theses work
  - Peter and ME are adjunct faculty at URI/CS
- Software Engineering Apprenticeship (SEA) Program
- Project work in joint proposals to NSF, NIH, US Dept. of Education, …
- Summer internships
- Student jobs
- …
The Beginning

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