Topics covered in Lecture
(midterm to Final)

Network & Multiplayer Games

- Network basics
  - TCP vs UDP, Lossy TCP
- Connection models
  - Client/Server, P2P, Broadcast
- Game network models
  - Input Reflection vs State Reflection
  - Synchronous vs Asynchronous play
Network & Multiplayer Games

- In-Game Network techniques
  - Latency management/Arbitration
  - Dead Reckoning
  - Hierarchical messaging
- MMORPG & Networks
  - Spatial subdivision – pros and cons
  - Spike alerts and automatic resizing

Game Interfaces

- Types and trends of interfaces
  - Gamepads -> Wii/Kinect
  - Touch/Multitouch
  - Specialized hardware
- Software interfaces – Menus/GUI
- Design principles for HCI:
  - Visibility; Mappings; Affordances; Feedback
Game Interfaces

- Literal vs Symbolic interfaces
- Wii/Kinect showcase
  - Highlights technology and impact
- Direct Brain interfaces
- Stroke/Gesture-based systems

Camera Control

- Games as interactive cinema
- Basic game cameras
  - first person/third person
  - visibility problems and fixes
- Camera types
  - dolly, crane, steadycams
  - manual placement in game
Camera Control

- Approaches for automatic cameras
  - Oskan visibility planning
    - discussed algorithm and pros/cons
  - Scripted cinematography

Game Design

- Introduction of Ludology
- Types of fun; types of games
  - Fun: Physical, Social, Mental
  - Games: Freeform (Paidia) to Rule-heavy (Ludus)
Game Design

- Game design concepts
  - Challenges and goals
  - Intentions and consequence
  - Fun derived from mechanics, interaction, aesthetics
- Game structure in relation to choice
  - Manage challenges
  - Levels -> convexities
  - Build narrative

Audio Programming

- Sound 101
  - Digital representations and processing
  - Analog <-> Digital
  - Pitch and volume
  - Storage and data management
- Volume control
  - Attenuation
  - Attack/Decay/Sustain/Release (ADSR)
Audio Programming

- Sound in space
  - speaker placement, surround sound
  - head relative transfer function (HRTF)
- Environmental effects
  - direct, echo, reverb and their relation to:
  - obstruction and occlusion modeling
- Level design and audio scripting

Audio Programming

- Sound automation techniques
  - Sound rendering (Funkhouser et al 1998)
Serious Gaming

- Serious games applications
- Flipped classroom exercise
  - Team-based brainstorm for serious games

Mobile Gaming

- Differences to “normal” gaming
  - Hardware
  - Interfaces
  - Delivery
- Trends point to mobile games
  - User base/cost/in-game spending
- Mobile game platforms
  - Android vs. iOS
Mobile Gaming

- Middleware Creation Tools
  - Cross-platform development
  - Unity, Unreal, etc.
- Development in practice
  - small teams, fast turn-around
  - compact, optimized software

Mobile Gaming

- Cloud Gaming
  - Architecture
  - Pros/Cons
  - Hybrid systems
Game Production

- Publisher vs Developer
- Quality Assurance
- Financial Breakdown
- Marketing
- Production Timeline

IP 101

- Basics:
  - Patents
  - Copyrights
  - Trademarks/Tradedress
  - Trade Secrets

- IP in games