What do we learn?

- Game programming
- Game architecture
- Graphics programming
  - Game computer architecture
  - Computer architecture case studies
  - Emerging architecture
  - Low level programming
  - Graphics processor hardware
  - CUDA programming

Xbox 360

- [http://www.metacafe.com/watch/yt-PGoQx112D6i/howto_disassemble_an_xbox_take_it_apart_dot_net/](http://www.metacafe.com/watch/yt-PGoQx112D6i/howto_disassemble_an_xbox_take_it_apart_dot_net/)
**Game Console**

- CPU
- GPU
- I/O devices

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**Who Should Take?**

- If you want to develop
  - Xbox 720 Xbox 1440?
  - Playstation 4,5,6?
- If you want to program efficiently using those hardware.
- Background
  - CS2200
  - Haven’t taken CS6290/CS4290
  - Haven’t taken CS8803SC

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**To Graduate students**

- This course is designed for undergraduate students who haven’t taken CS6290.
- Suggested course
  - CS8803MCA: Many core architecture
Course Info

- A tentative homepage address
  - [http://www.cc.gatech.edu/~hyesoon/spr09/index.html](http://www.cc.gatech.edu/~hyesoon/spr09/index.html)

Why Game Consoles?

Effects of Game Industries

- Leading the industry
- Game processors are used for other applications
  - GPGPU:
  - Medical image processing
  - Scientific applications
- Movie industries
**Requirements for GC**

- Time constrain
- Lots of Data
- Heavy use of graphics
- Both Integer/floating point operations are important
- Floating point → low precision
- Stream applications
- Embedded systems
- Various I/O devices
- No comparability issues (no reason to support legacy code)
- All the platform is stable:
  - Platform optimizations

**Xbox 360**

**Xbox 360 System Block Diagram**
Xbox 360 Architecture

- 3 CPU cores
  - 4-way SIMD vector units
  - 8-way 1MB L2 cache (3.2 GHz)
- 48 unified shaders
- 3D graphics units
- 512-Mbyte DRAM main memory
- FSB (Front-side bus): 5.4 Gbps/pin/s
- 10.8 Gbyte/s read and write

Xbox 360 CPU Block Diagram

Announcements

- Student’s information sheet
- Due (1/15)
- Sign in the sign up sheet