Research and Educational Innovations in Computer Games

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GAME CULTURE & TECHNOLOGY LAB

and

California Institute for Telecommunications and Information Technology (Calit2)
Computer Game Industry

Regional (Silicon Coast, CA)
  70+ game companies in LA-San Diego area
  Industry leading game companies in CA:
    Electronic Arts, Blizzard Entertainment, Activision, THQ.

International (South Korea, Japan, China, etc.)
  30% of South Koreans play computer games
  Games currently 5% GDP; 2012 Goal, 10%
Players: >60% male, average age, 33 years old. (Entertainment Software Association)

Game development costs:

Game application areas: military training, corporate training, health care, real estate, manufacturing, etc.

Growth areas: MMOGs, mobile games, education, scientific research, alternate reality games
UC Participation in Game Research and Education

Game faculty in UC System

Berkeley (3), Davis (1), Irvine (>10), Los Angeles (3), Merced (1), Riverside (1), Santa Barbara (3), Santa Cruz (3), San Diego (>10), San Francisco (1).

Game faculty interests at UCI and UCSD:

Anthropology, Biomedical Engineering, Communications, Computer Science, Earth Systems Sciences, Education, Electrical Engineering, English, Film and Media Studies, History, Informatics, Physics, Software Engineering, Studio/Visual Arts
UCI GameLab Research Partners and Sponsors

- Daegu Digital Industry Promotion Agency
- NSF
- Taco Bell Discovery Science Center
- Sun Microsystems
- the UC Discovery Grant
- UCHRI
- ISR
- it²
- bren: school
- OCTANe @ UCI
- Claire Trevor School of the Arts
- Blizzard Entertainment
- gamespy
- K2 Network
- Linden Lab
Game Research: Open Source Game Software Development

The most successful OSSD projects obtain sustained exponential growth in their innovation frontier.

Computer game software development is the #1 application area (and #2 overall) for Open Source Software development (OSSD) projects.

Growing number of commercial computer games now ship with tools for creating OSS game “mods”

Future game development will increasingly depend on global OSSD practices and components.
Science Learning Games for Informal Science Education

Physical interaction environment: *DinoQuest* at the Discovery Science Center (Santa Ana, CA)

- Life-size dinosaurs (T. Rex, Argentinosaurus)
- Family-based problem-solving and collective learning in physically embodied game play environment
- Game progress tracked via user-controlled IR wand that activates embedded electronic media

Online science games: *DinoQuest Online*

- Addresses CA science education standards for K-6 grades
- Interoperates with *DinoQuest*
- Designed for internationalization
- Developed by UCI GameLab

DSC planning new SLG exhibits through 2010

- $60M investment
- DSC seeking development of network of SLG-base science centers and exhibits
  - OC, CA, US, Korea, Mexico, Turkey
Game-Based Science

Games can employ advanced scientific models, simulations, visualizations

- Global Climate Systems Science game engine
- Nanotechnology-based “incredible machines”
- Plasma fusion energy generation quest
- Supply chain/infrastructure transformation quest

Game environments can become platforms for experimentally interacting with emerging scientific models and domains of expertise
Game Research Opportunities

UC could partner with a network of regional science centers to create a venue for informal science education via online science learning games and physical interactive exhibits.

UC could lead the development of OSS games focusing on multi-discipline, internationalized educational outreach and public engagement.

UC could pioneer R&D for game-based science.

UC has the opportunity to lead the development of the Web 3.0: The Game Web.
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