

Recent Advances in Game-Based Virtual Worlds at UCI

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Motivation

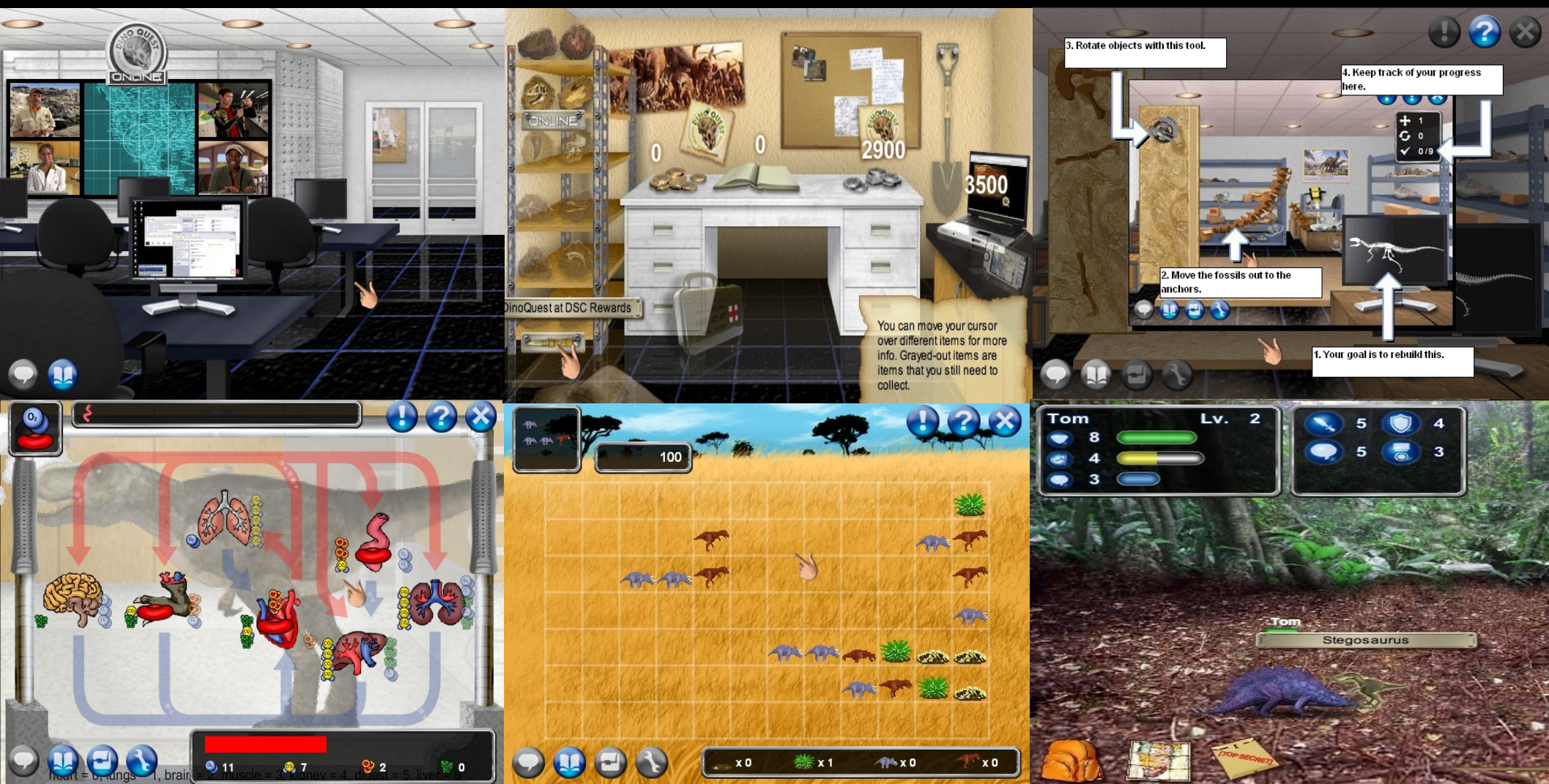
What are we doing?

- Empirical research and technology prototyping of CGVWs that support challenge problems in science, health care, energy, environmental, and defense studies

Why are we doing this?

- CGVWs are both *technology* and *new media*
 - this represents a new opportunity area for research and innovation
- Enable immersive and transformative experiences that facilitate learning through R&D and Play
- Engage new students and emerging scholars

Web-based science learning games for informal science education for K-6 students and families



<http://www.DQOnline.org/>

Scacchi, W., Nideffer, R. and Adams, J. (2008), A Collaborative Science Learning Game Environment for Informal Science Education, in *New Frontiers for Entertainment Computing*; P. Ciancarini, R. Nakatsu, M. Rauterberg, M. Roccetti (Eds.); Boston: Springer, 71–82.

Game-based VW incorporating real-world news feeds and geopolitically located Twitter feeds

Top-Left Screenshot: City Street View

Stocks Information Box:

A Monopoly exists when an enterprise has sufficient control over a particular product or service to determine the terms on which others have access to it.

Monopolies derive their market power by impeding a potential competitor's ability to enter and/or compete in a given market.

A prime source of monopoly power is the control of resources that are critical to the

Dow Jones Industrial	11,362.41
S&P 500	1,221.53
NASDAQ	2,573.35

Play Stock Investors

Bottom-Left Screenshot: Terminal Window

AAPL 270 v MkCap: 246B \$0

MSFT 25.0 v MkCap: 219B

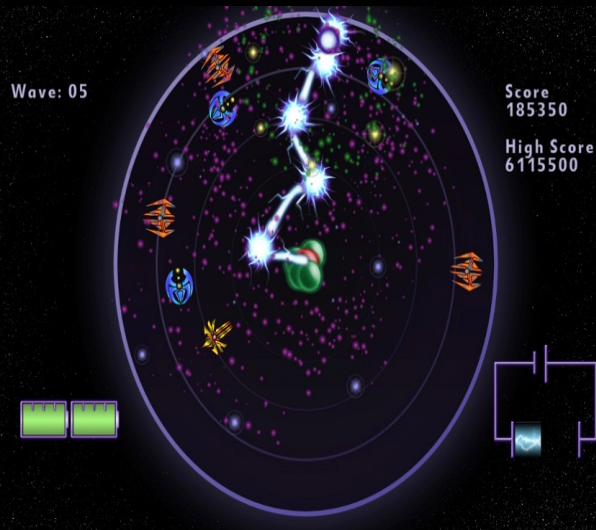
Bottom-Right Screenshot: Military Base View

Foreign Military

Game Interface Data (Bottom of Screenshots):

Category	Value
Capital Accumulation	\$2.000M
Civic Health	72.86%
Economic Health	70.73%
Ecological Health	72.15%
Core	60.73%
Semi-Periphery	35.73%
Periphery	58.57%
Ecological Health	57.16%
Ecological Health	67.15%
Capital Accumulation	\$1.780M
Civic Health	74.96%
Economic Health	74.93%
Ecological Health	74.95%
Core	64.93%
Semi-Periphery	39.93%
Periphery	59.97%
Ecological Health	59.96%
Ecological Health	69.95%
Capital Accumulation	\$2.000M
Civic Health	74.21%
Economic Health	73.43%
Ecological Health	73.95%
Core	63.43%
Semi-Periphery	38.43%
Periphery	59.47%
Ecological Health	58.96%
Ecological Health	68.95%

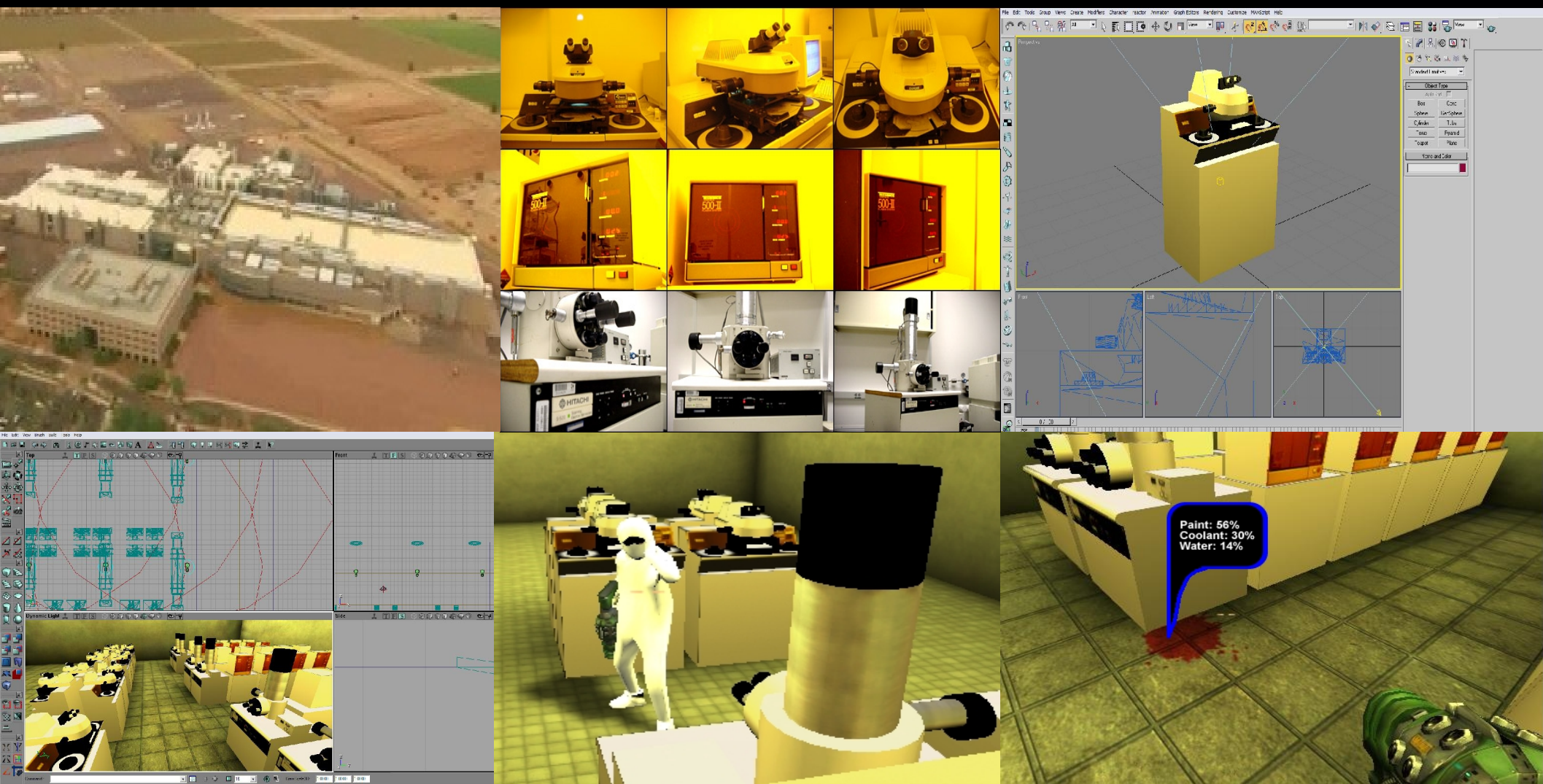
Computer games developed by UCI video game developers club (undergrad students)



CGVW Laboratory and experimental game devices



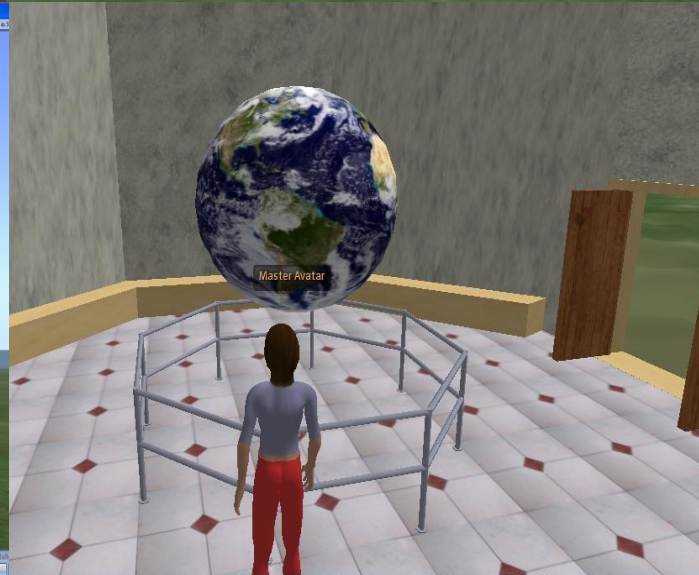
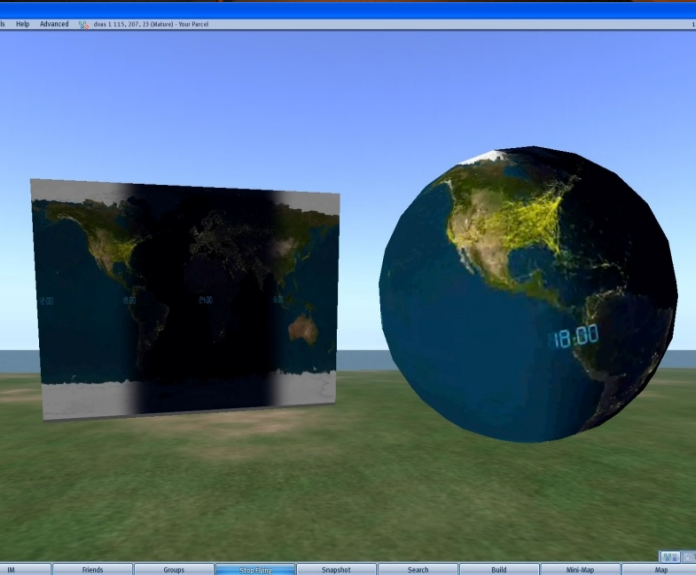
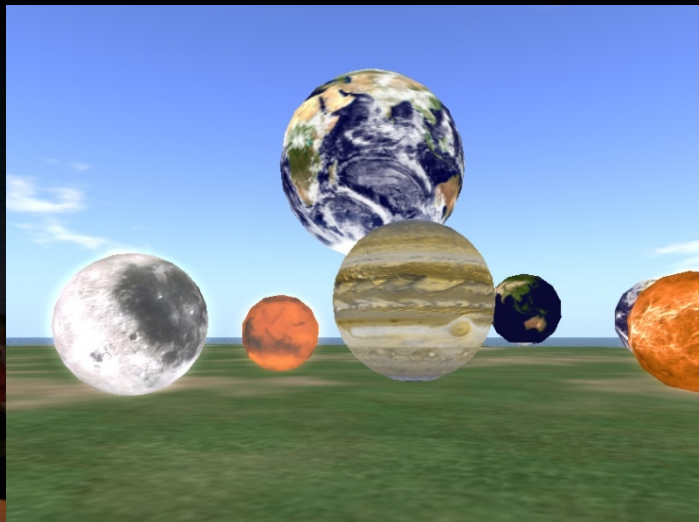
Semiconductor/nanotechnology fabrication training game



FabLab Demo Reel

Scacchi, W. (2010). [Game-Based Virtual Worlds as Decentralized Virtual Activity Systems](#), in W.S. Bainbridge (Ed.), *Online Worlds: Convergence of the Real and the Virtual*, Springer, New York, 225-236.

Planetary science data visualization and “spherescasting” support: *NOAA Science on a Sphere* installation in *Opensim* VW platform



VW for experimental studies in decentralized command and control centers



Research Collaborators

Faculty

– Thomas Alspaugh, Alfred Kobsa, Crista Lopes, Gloria Mark, Bonni Nardi, Robert Nideffer, David Redmiles, Richard Taylor

Post-Doctoral Scholars

– Hazel Asuncion (UWash), Garnet Hertz, Chris Jensen

Research Staff

– Craig Brown, Yuzo Kanomata, Kari Nies, Alex Szeto

External Partners

– Aerospace Corp., Discovery Science Center, Encitra Inc., EON Reality Inc., Intel Research, Naval Postgraduate School, Northrop-Grumman, Panasonic Shikoku Electronics, San Francisco Symphony, UCI Calit2, UCI Video Game Developers Club.

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