

Realizing a Multi-Disciplinary Center for Games Research at UCI

Walt Scacchi and friends

Institute for Virtual Environments and Computer Games

University of California, Irvine

[*ivecg.uci.edu*](http://ivecg.uci.edu)

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Motivation

What are we doing?

- *Empirical research and technology prototyping* of computer games/virtual worlds (CGVWs) that support challenge problems in science, health care, art, technology and defense studies
- Collaborate with external R&D partners/sponsors
- High risk, adventuresome research projects

Motivation

Why are we doing this?

- Computer games are both *technology* and *new media*
- *Play* and *work* are not fundamentally different activities
- Enable immersive and transformative learning experiences
- Engage new students and emerging scholars
- Realize the interests of more than 50 UCI faculty at IVECG

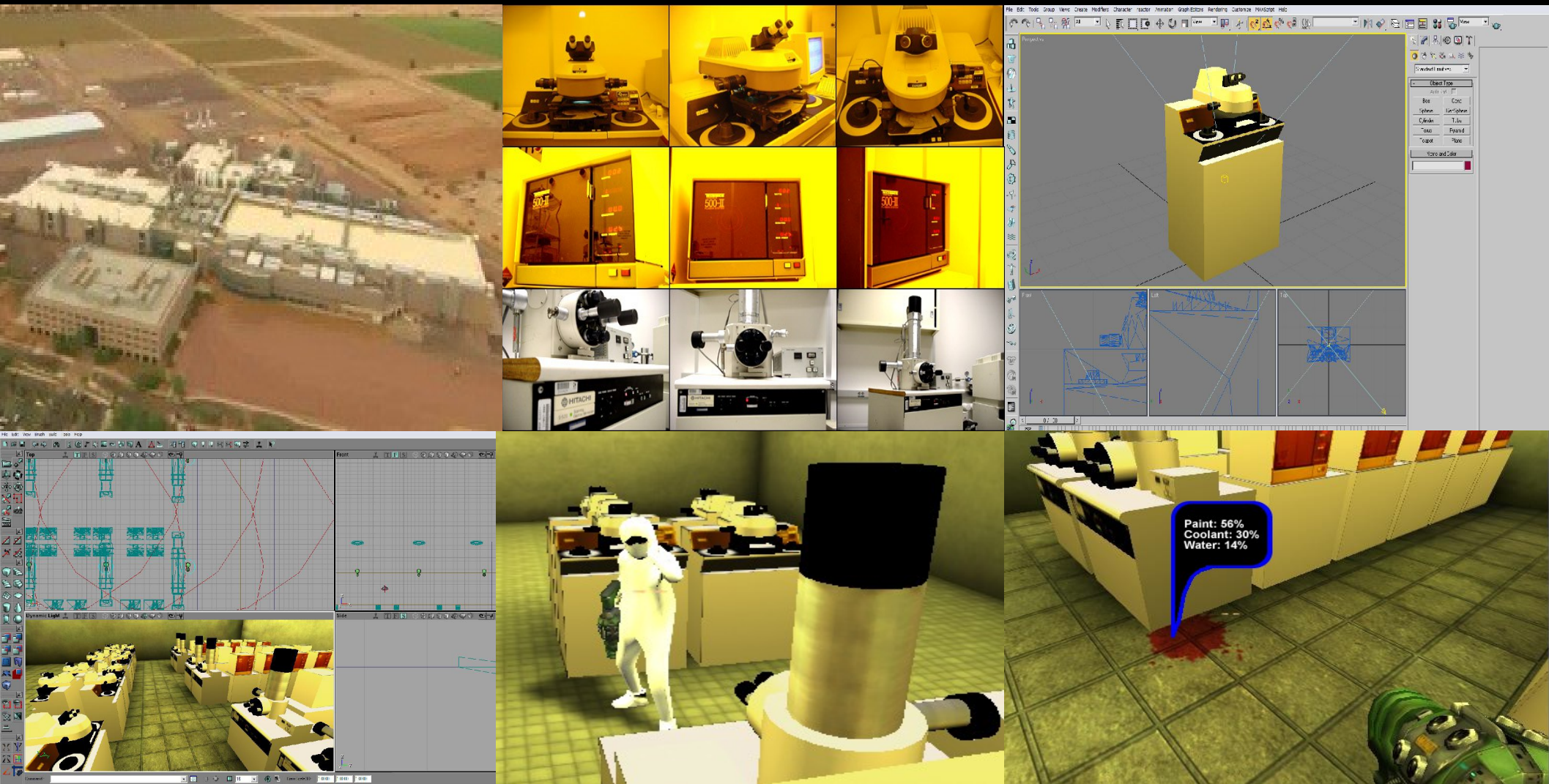
Some game R&D projects of interest

- ◉ Science learning games for informal science education at *Discovery Science Center*
- ◉ Game-based semiconductor fabrication operations training simulator at *Intel*
- ◉ Virtual worlds for space science on a sphere at *DSC*
- ◉ Game-based decentralized command and control training simulator for *Naval Postgraduate School* and *Northrop-Grumman*
- ◉ Informal classical music learning game environment for *San Francisco Symphony*
- ◉ Experimental games for business, cultural critique, art and technology
- ◉ Facilitating local game development community
- ◉ New projects in progress:
 - ◉ Games for Biological and NeuroScience Education

The collage consists of six screenshots from the DinoQuest educational game. The top-left screenshot shows a virtual classroom with multiple computer monitors displaying different scenes. The top-middle screenshot shows a museum desk with a computer, a book, and a sign that says "DinoQuest at DSC Rewards". The top-right screenshot shows a museum display with a dinosaur skeleton and a sign that says "1. Your goal is to rebuild this." The middle-left screenshot shows a diagram of a dinosaur's internal organs with arrows indicating the flow of blood and air. The middle-middle screenshot shows a grid-based puzzle game with a dinosaur and a sign that says "100". The middle-right screenshot shows a dinosaur in a jungle environment with a sign that says "Tom Stegosaurus". The bottom screenshot shows a status bar with various stats: heart = 6, lungs = 1, brain = 1, muscle = 3, dino = 4, dino = 5, live = 0.

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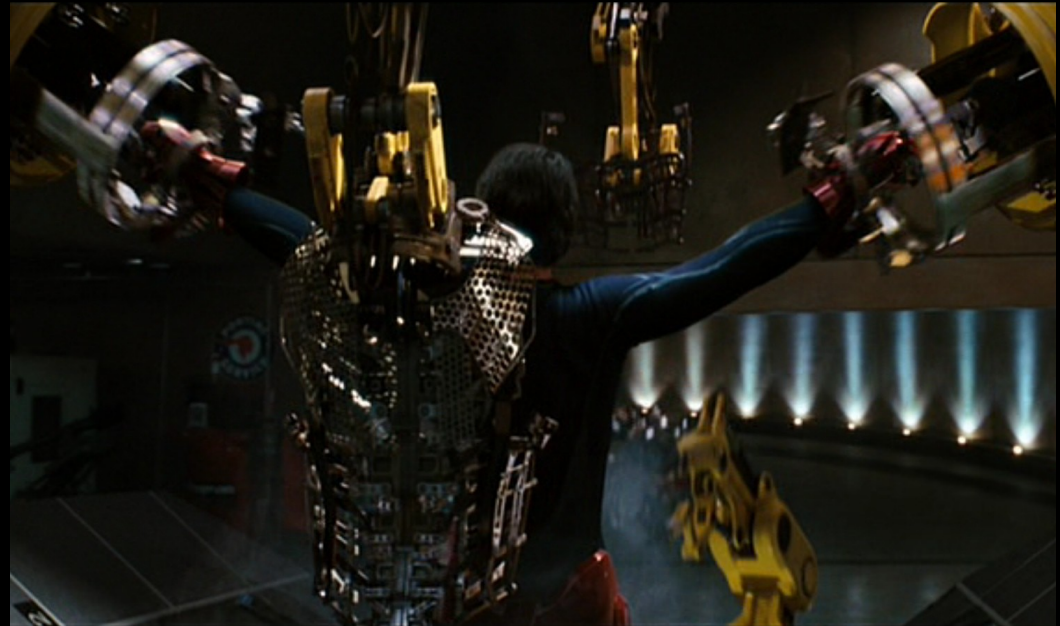
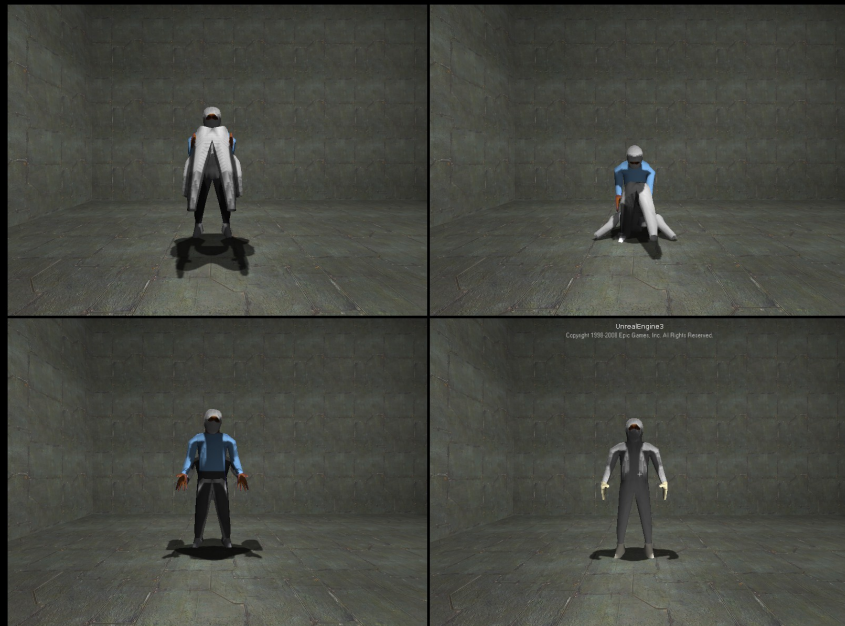
Semiconductor/nanotechnology fabrication training game



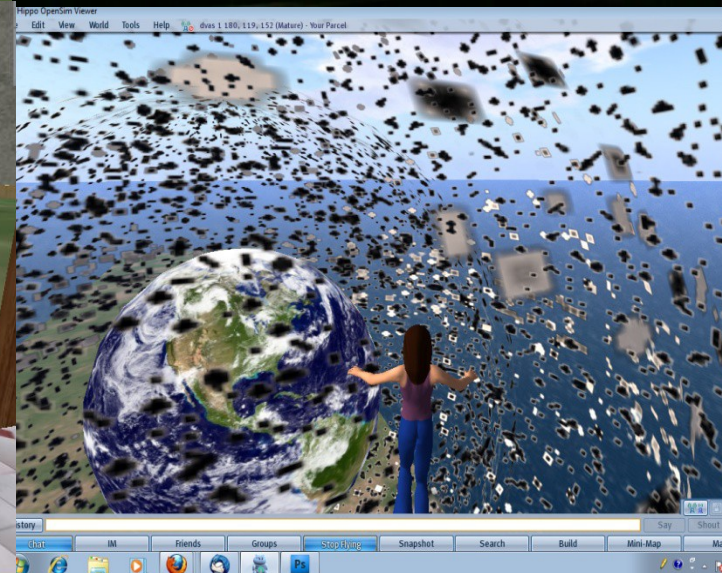
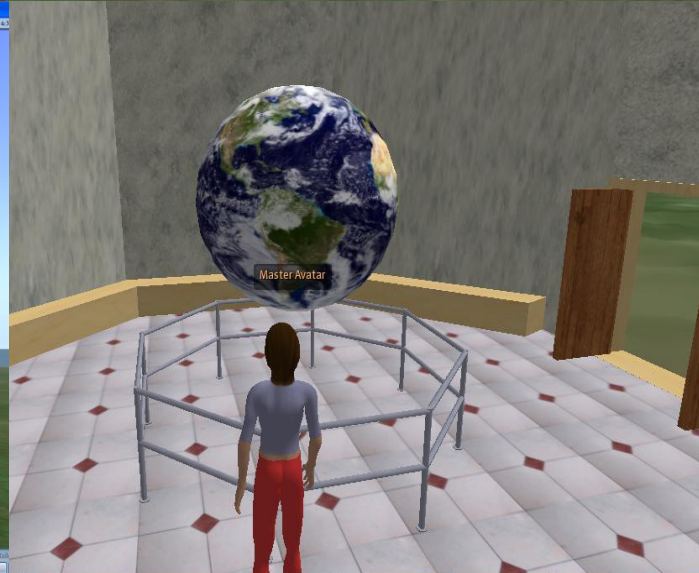
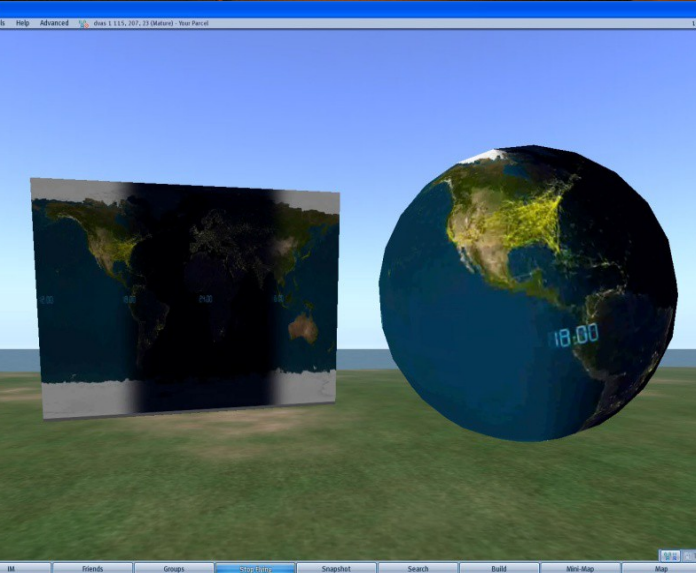
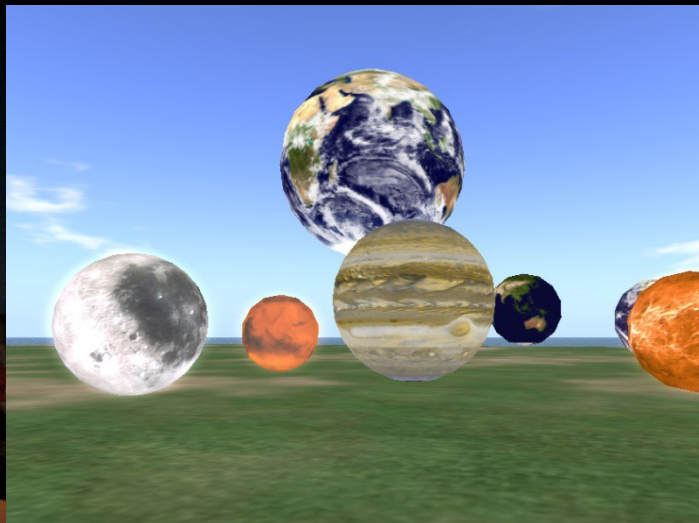
FabLab Demo Reel

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.

Semiconductor/nanotechnology fabrication training game: “gowning processes”

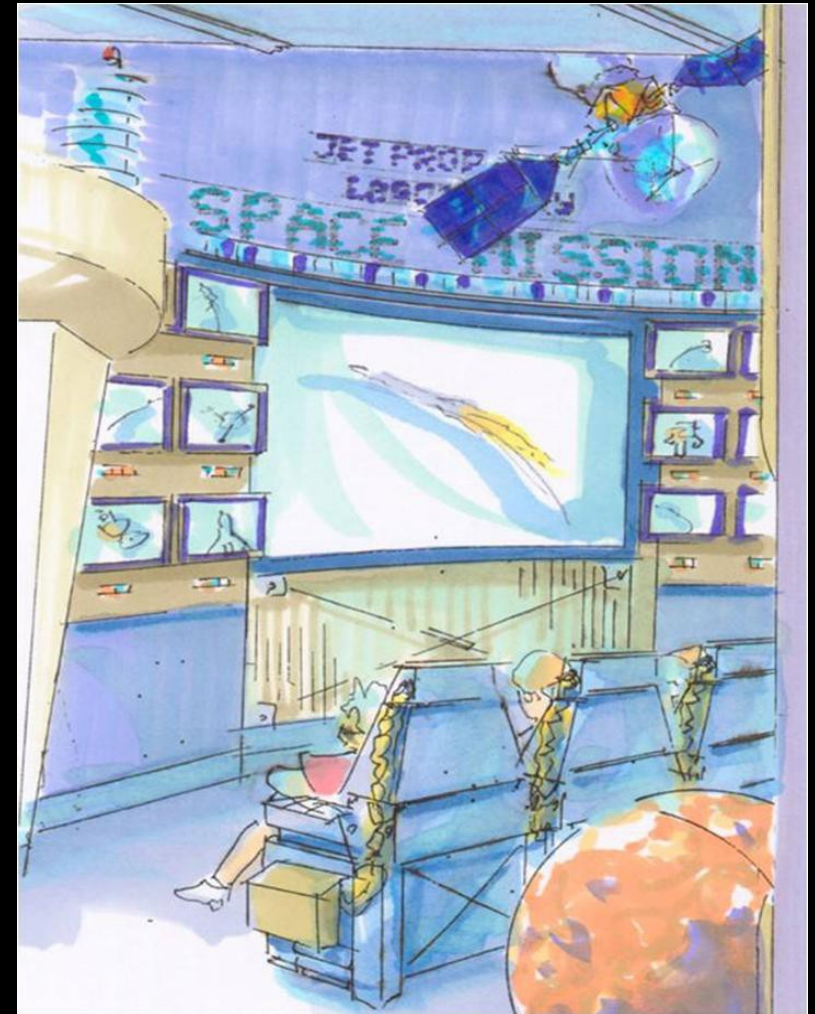
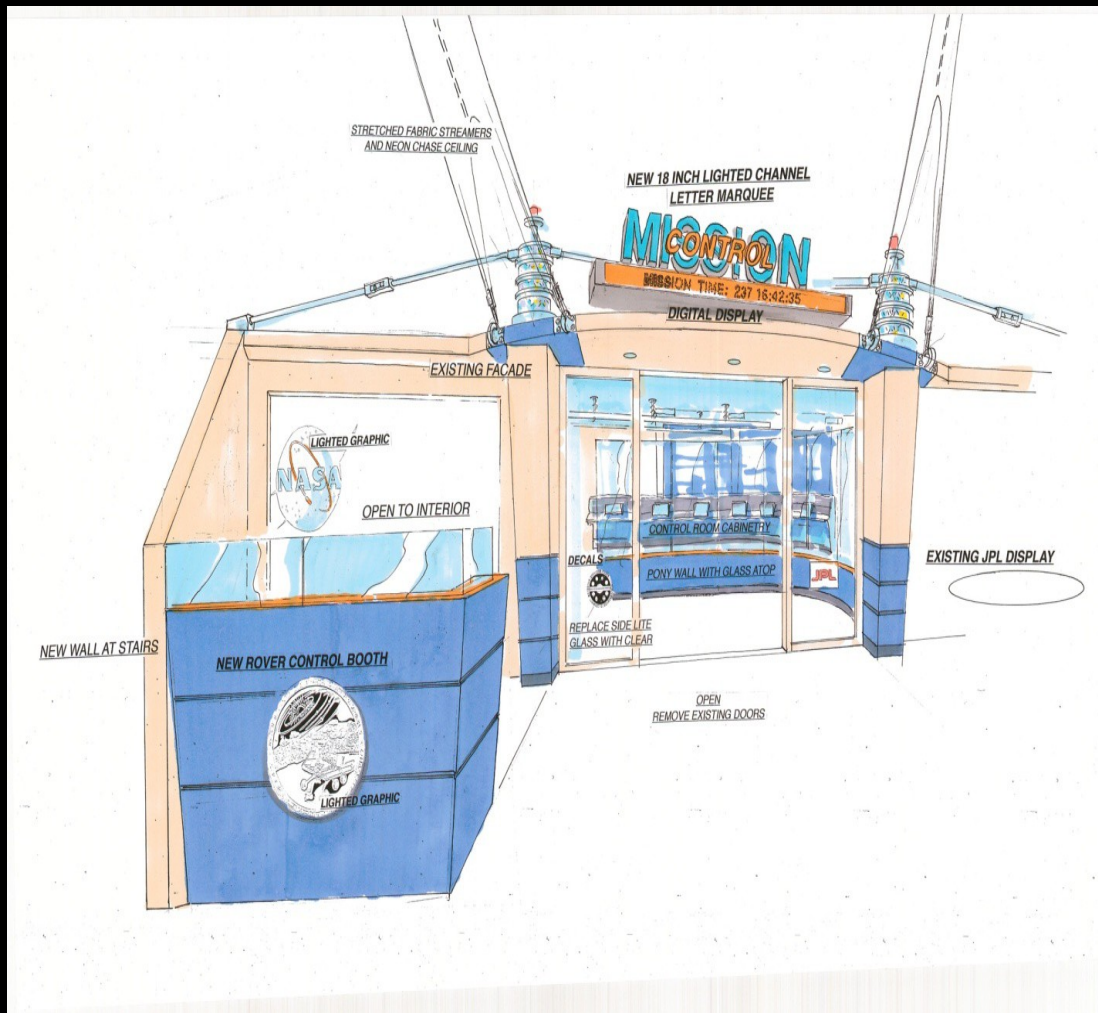


Planetary science data visualization and “spherecasting” support: *NOAA Science on a Sphere* installation in *Opensim* VW platform



Supporting virtual exploration of planetary and near-earth objects (space debris, small satellites, near-earth asteroids)

Mission Control Room: Vision for *Discovery Science Center*



VW for experimental studies in decentralized command and control centers using open source software (*OpenSim*)



Informal Classical Music Learning Game Environment: *SFSKids.org*



Discover Music

Under the Sea of Knowledge.



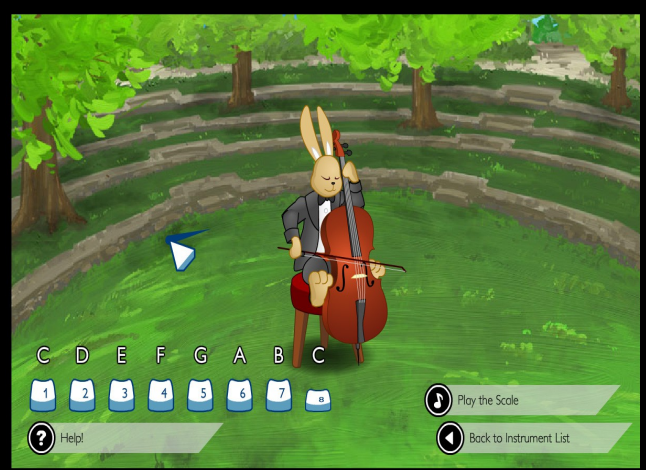
Play with Music

Above the Musical Skies



Perform Music

In the Instrument Garden



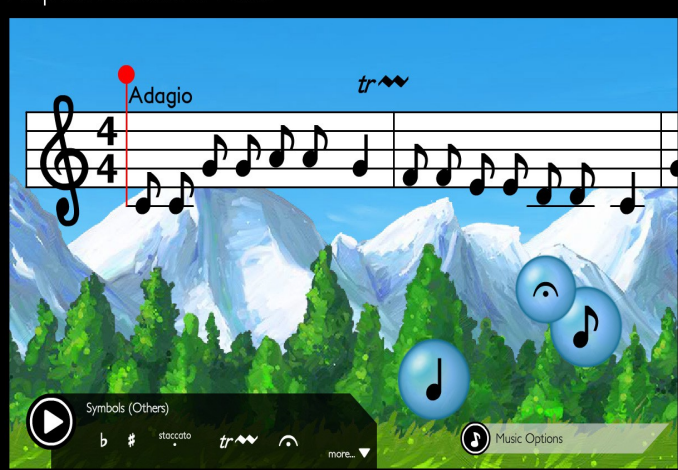
Conduct Music

At the Symphony Hall

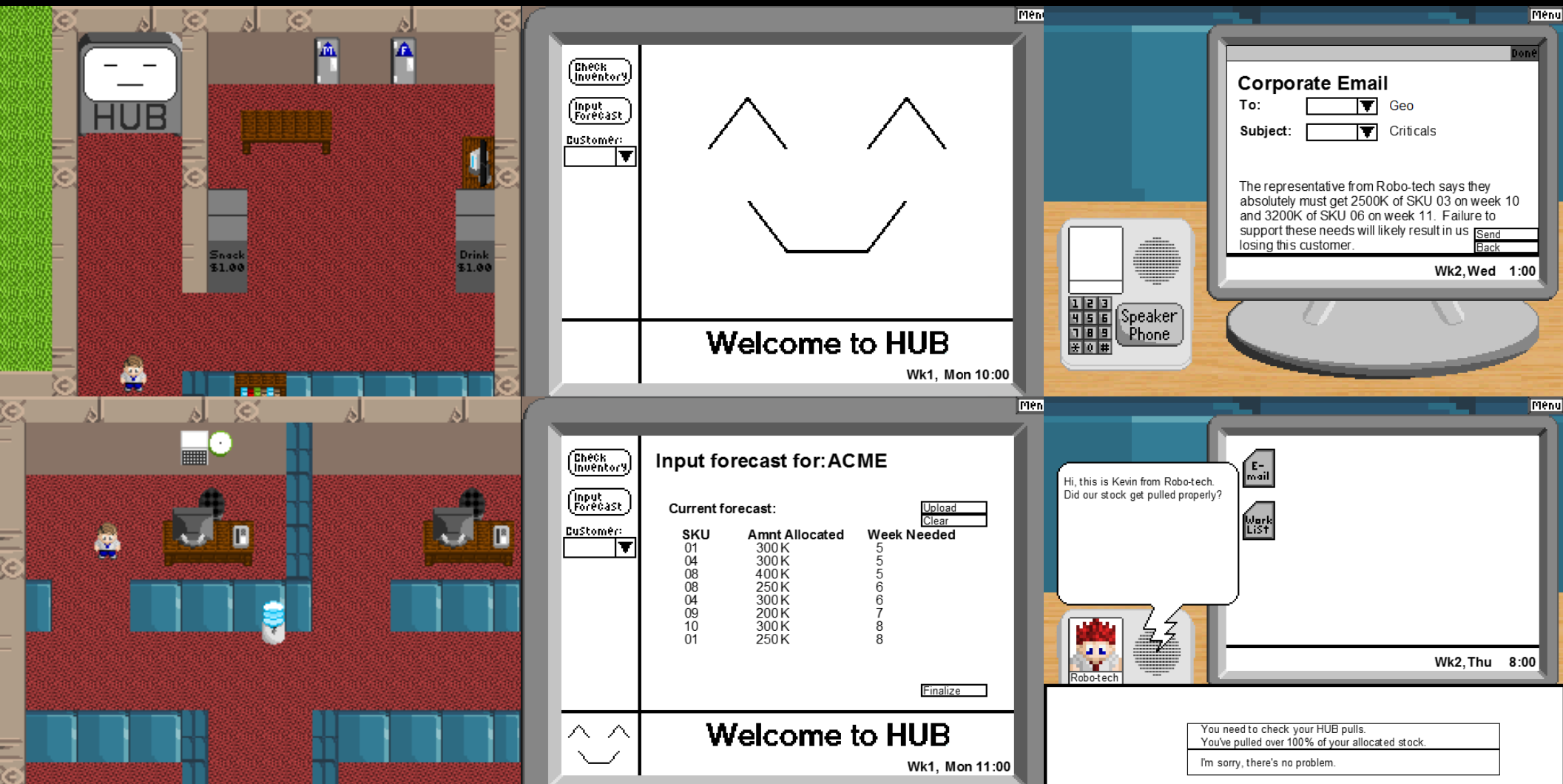


Compose Music

Atop the Mountain of Muses



CBA: Customer relations work practices simulator implemented using low-cost, rapid micro-development cycle



2D, side-scrolling, *World of Warcraft* inspired, role-playing game and CGVW development/modding kit

Aoedipus.net



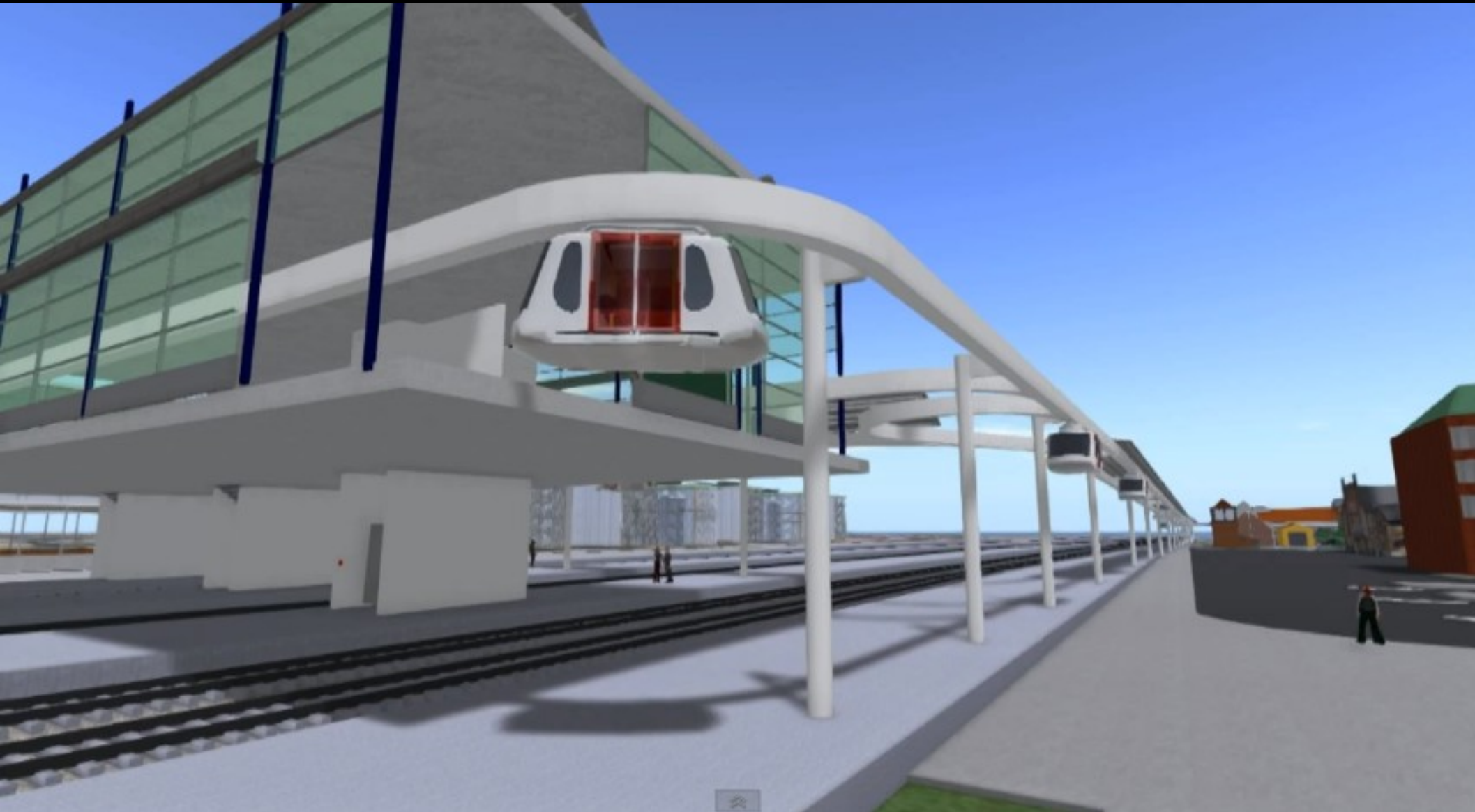
Envisioning a virtual social computing world

Virtual Life in 2010+ a vision of the future



Virtual Life Demo Reel

Modeling and Simulating the design of a Personal Rapid Transit system for Uppsala, Sweden



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



Game-based VW simulator interfaces for immersive motorsports racing experiences: *cost* vs *realism*?



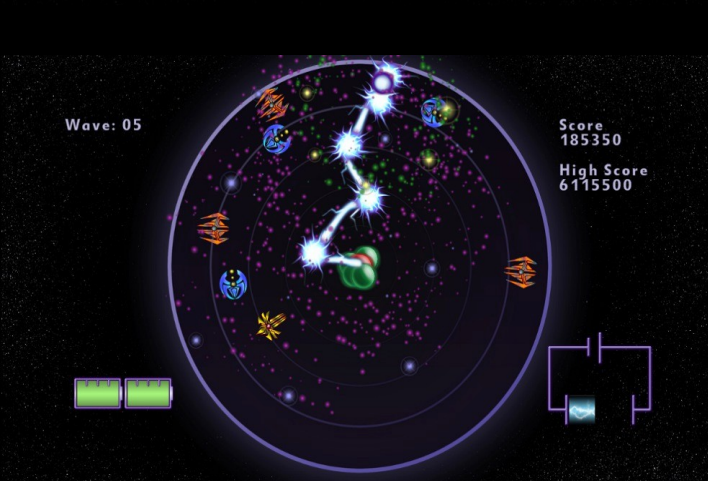
\$500 vs. \$5000 vs. \$50,000 vs. \$500,000 vs. \$5,000,000

Game-based VW simulator you can actually drive in physical world! -- *OutRun* @ UCI



<http://www.conceptlab.com/outrun>

Community development concept: Supporting UCI video game developers club projects (sample)



Community development concept: Supporting UCI video game developers club via Computer Game Science Laboratory



Community development concept: *IEEE Intercollegiate Computer Game Development Showcase* (2012-2014)



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Intercollegiate Game Showcase 2013



Programming skills on Fire

University of California at Irvine (UCI)
Saturday April 27, 2013 at 2:00PM

COMPETE in our Game Contest, Win PRIZES,
EARN ACHIEVEMENTS & FINE TUNE YOUR SKILLS





Game Event

details about game event

Venue: University of California at Irvine in Bren Hall, Saturday, April 27. Setup starts at 11:00 AM. Main event starts at 2:00PM and ends at 4:00PM, followed by a reception with game demos from 4:00PM to 6:00PM.... [READ MORE](#)



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making this event possible

We have attracted even more sponsors this year, helping us make this event more exciting than ever. Please support these fine schools and companies... [SEE COMPLETE LIST](#)



Submission Guidelines

our submission rules etc.

Submissions begin on April 1, 2013 at 12:01AM Pacific Time (PST), and end on April 7, 2013 at 8:00AM Pacific Time (PST). Finalists will be selected based on their one page Executive Summary and 3-5 minute YouTube video submissions.... [READ MORE](#)

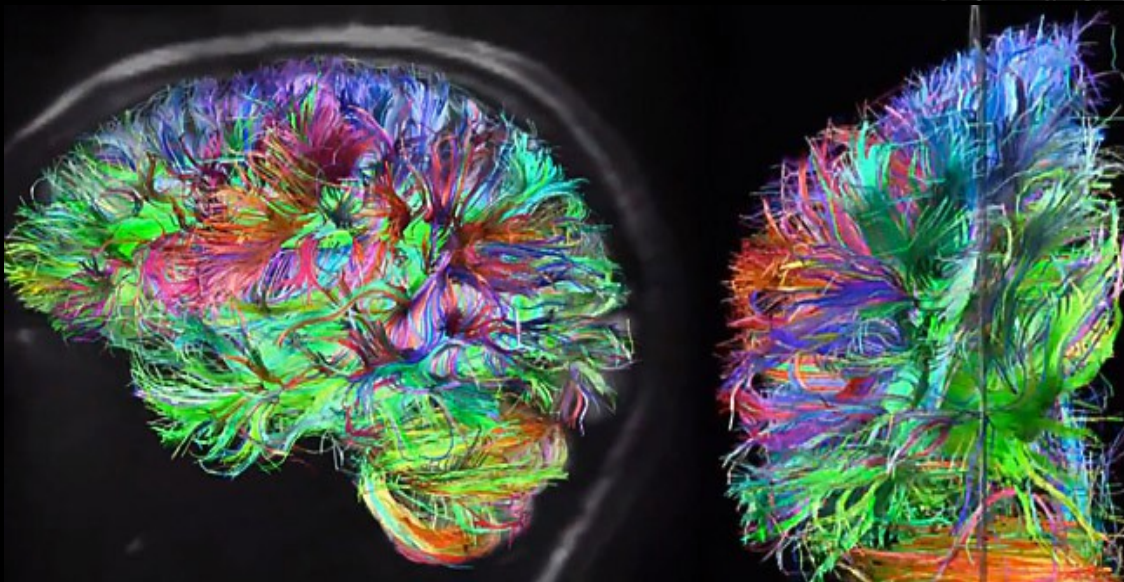
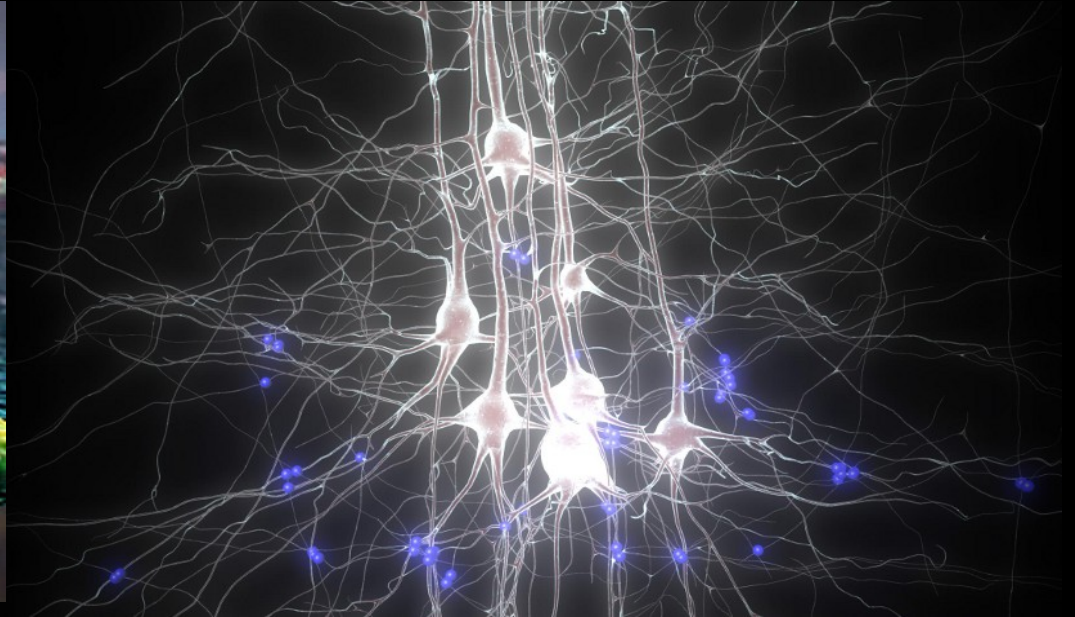
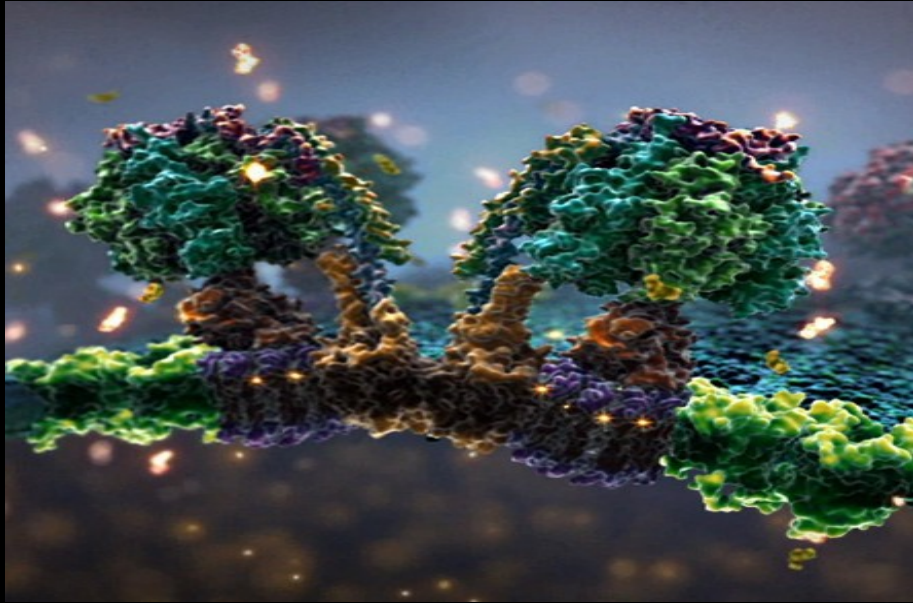
Game-Based Worlds for Neuroscience

Adventure/Quest games for learning neuroscience via experiments in simulated brain/anatomical testbeds to study:

- Neurobiological processes
- Disease and drug pathologies
- Brain repair and rehabilitation
- Brain-computer interaction (HMD, EMM, EEG, 5.1 headphones)



Games for Biology/NeuroSciences?



Research Collaborators

Faculty

– Robert Nideffer (RPI), Thomas Alspaugh, Jill Berg, Yunan Chen, Steve Cramer, Garnet Hertz (Emily Carr U), Alfred Kobsa, Jung-Ah Lee, Crista Lopes, Gloria Mark, Bonnie Nardi, David Redmiles, Richard Taylor, and many others

Research Staff

– Craig Brown (NomNom Games), Yuzo Kanomata (IGB), Kari Nies (ISR), Alex Szeto (American Honda, ISR), and others

Students

– UCI Video Game Developers Club

Acknowledgements

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 - Discovery Science Center, Naval Postgraduate School (Center for Edge Power), Intel, Northrop-Grumman, San Francisco Symphony, UCI (School of Medicine) Anatomy & Neurobiology, (School of Biological Sciences) Neurobiology and Behavior.
 - Digital Industry Promotion (DIP) Agency, Daegu, South Korea
 - UCI Video Game Developers Club
- ◉ *No review, approval, or endorsement implied.*