

Game Programs in a Research University

Michael Mateas

[expressiveintelligencestudio](#)

UC Santa Cruz

School of Engineering

michaelm@cs.ucsc.edu

May 20, 2010

What is the role of a CS–centric game program in a research university?

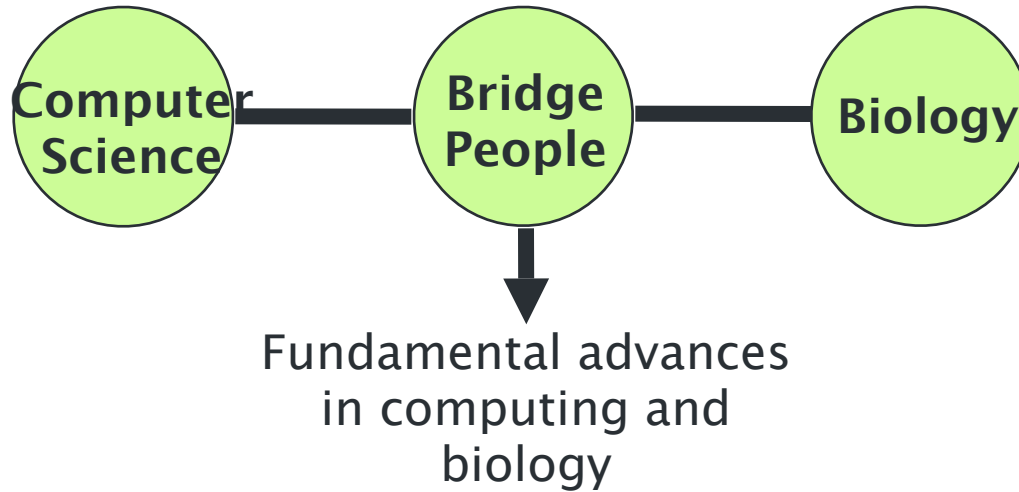
- Many programs started in response to dropping enrollment
- A strategy for accomplishing this is
 - CS faculty continue to teach standard courses
 - Faculty occasionally teach “<specialty> applied to games”
 - Majority of game–specific courses taught by

My background

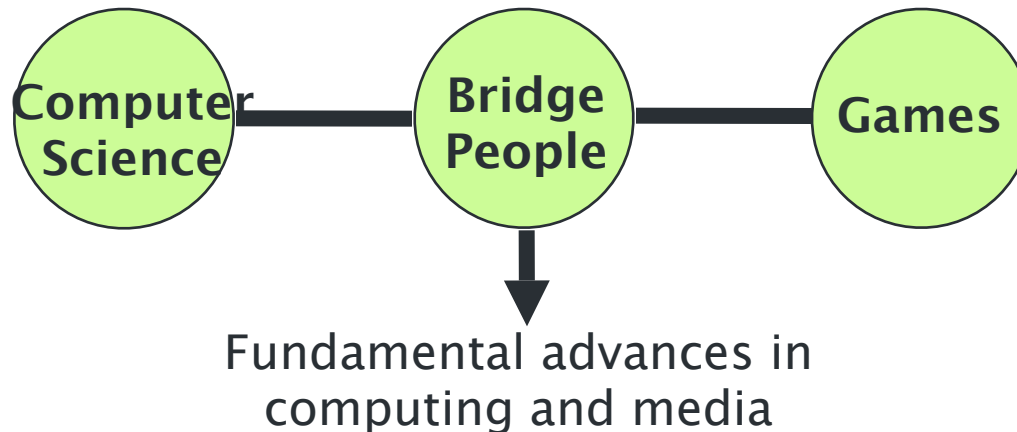
- Helped start CS: Computer Game Design program at UC Santa Cruz
- Founder and co-director of the Expressive Intelligence Studio
- At Georgia Tech, helped define the Computational Media program
- Last member of the Oz Project at CMU

Interdisciplinary and fundamental

Bioinformatics

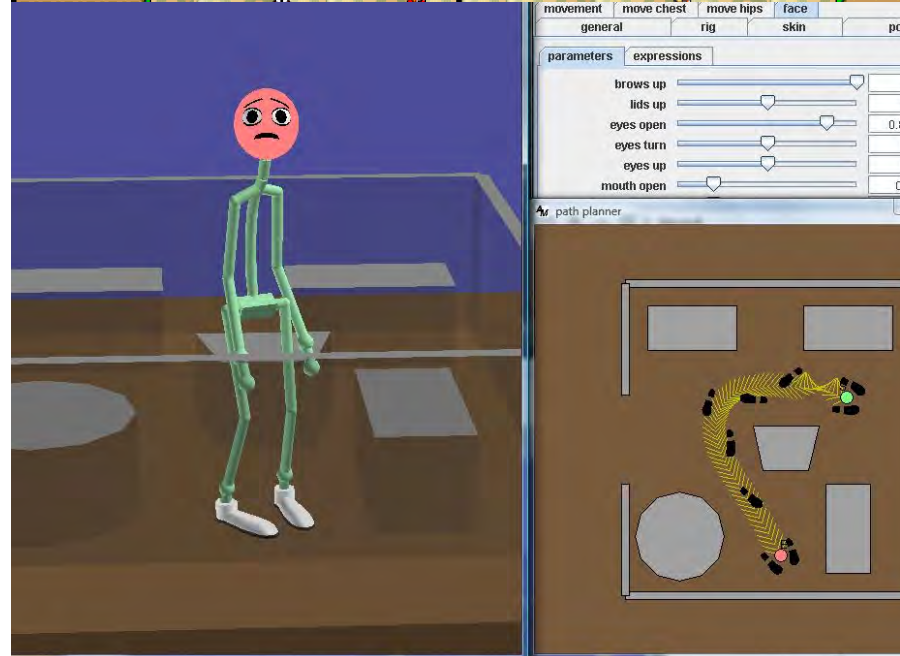
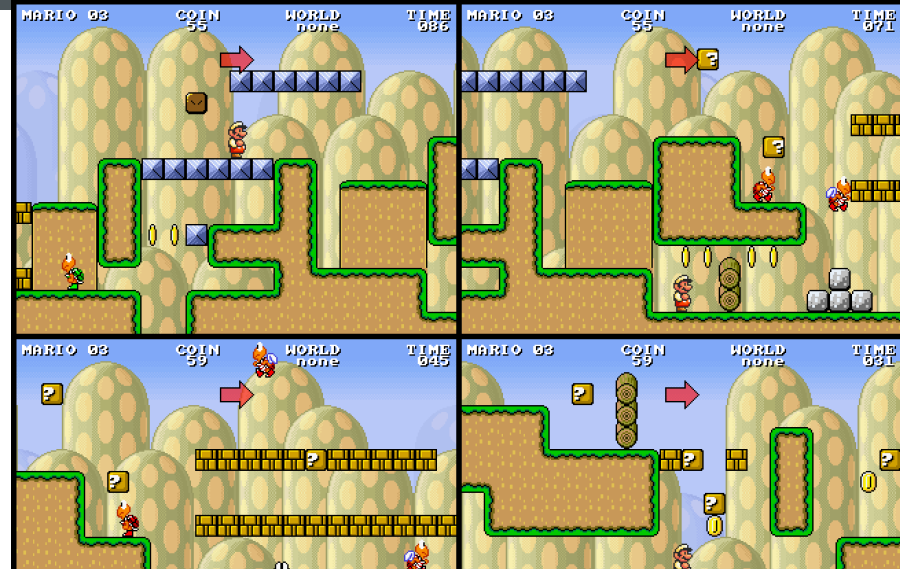


Computational media (games)



Procedural content generation

- Content models
- Models of perception, difficulty, progression
- Supporting designer control



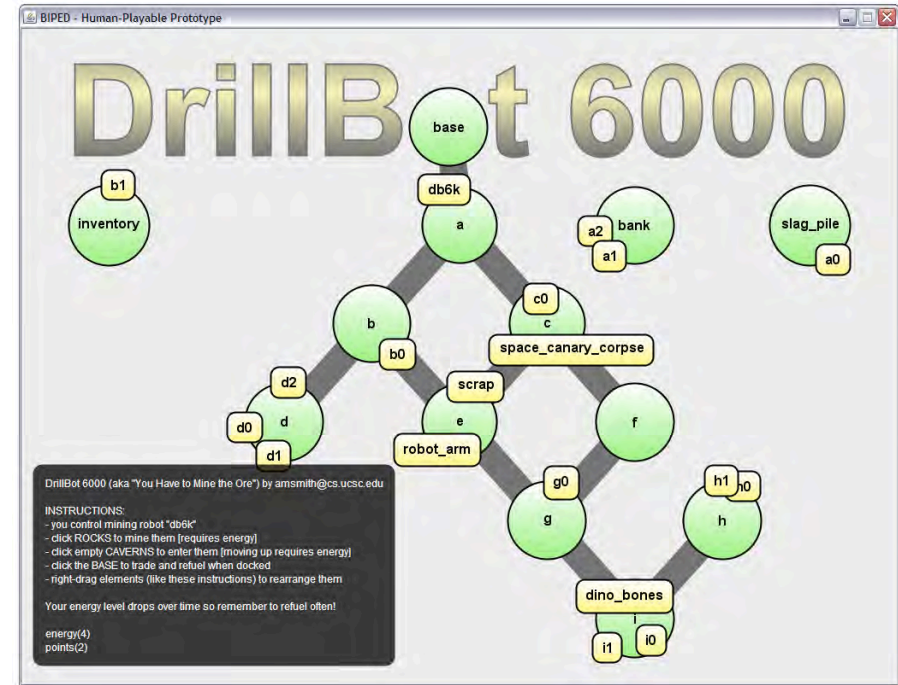
Computational narrative

- Autonomous characters (believability)
- Social interaction
- Dynamic story management
- Story generation
- Dialog



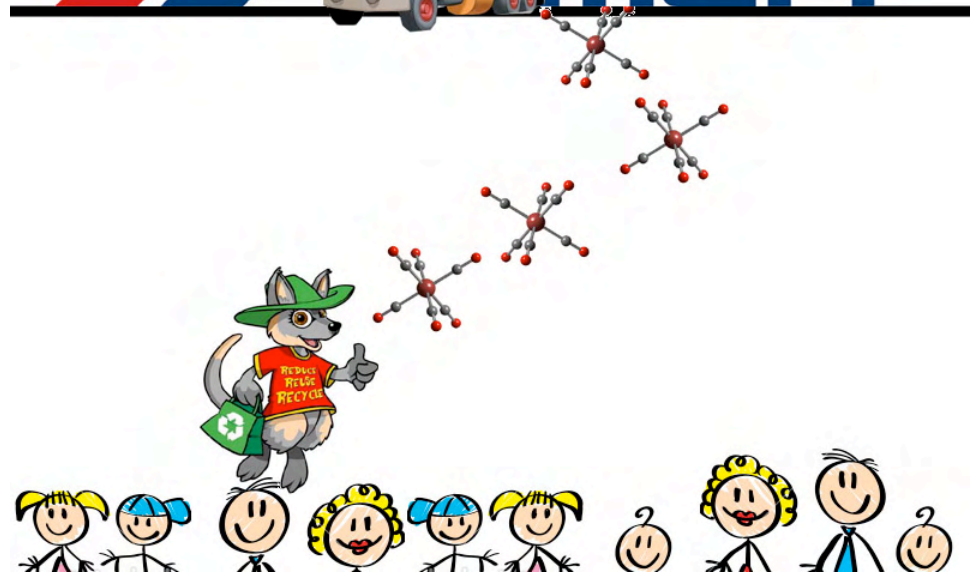
Formal modeling and data mining

- Reasoning about game mechanics
- Rule generation
- Learning AI from play traces
- Learning player models



Other CS & games research areas

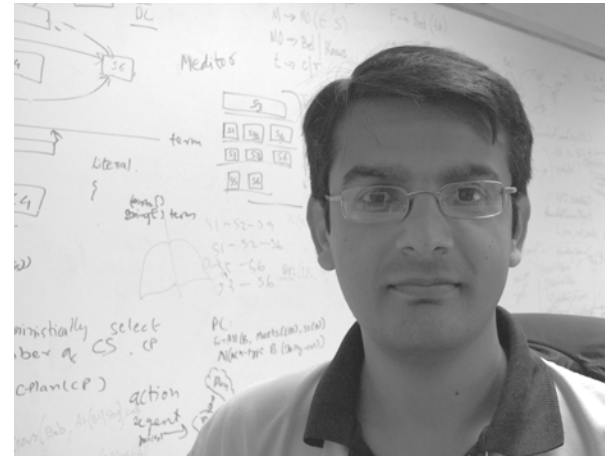
- Serious games
- Authoring support
- Novel interfaces
- Understanding play
- Design science for games



Computational media group



Jim Whitehead
: Software Engineering & Games



Arnav Jhala:
Computational Cinematography



Marilyn Walker:
Dialogue & Natural Language



Noah Wardrip-Fruin:
Playable Media, Interactive Storytelling, Software Studies



Michael Mateas:
Interactive Storytelling, Procedural Content Generation, Expressive AI

BS in CS: Computer Game Design

- Senior game design studio
- Freshman game design experience
- Sophomore game programming
- Upper division electives
 - 3 course sequence in graphics
 - Includes 3D game engine design
 - 3 course sequence in AI
 - Includes game AI, and narrative AI
 - Built on top of proven CS fundamentals curriculum
- Digital Media
 - 2 digital media electives
- Strong numbers



Articulation with graduate

- Undergraduate research
 - Last quarter 30 undergrads worked with faculty and Ph.D. students
- Courses featuring cutting-edge research
 - Interactive storytelling
 - Undergrad seminar on procedural content generation
 - Game engines (computational cinematography)
 - Game design
 - Game AI (autonomous characters)
 - Dialog systems