BIPED: Computational Support for Play Testing Game Sketches

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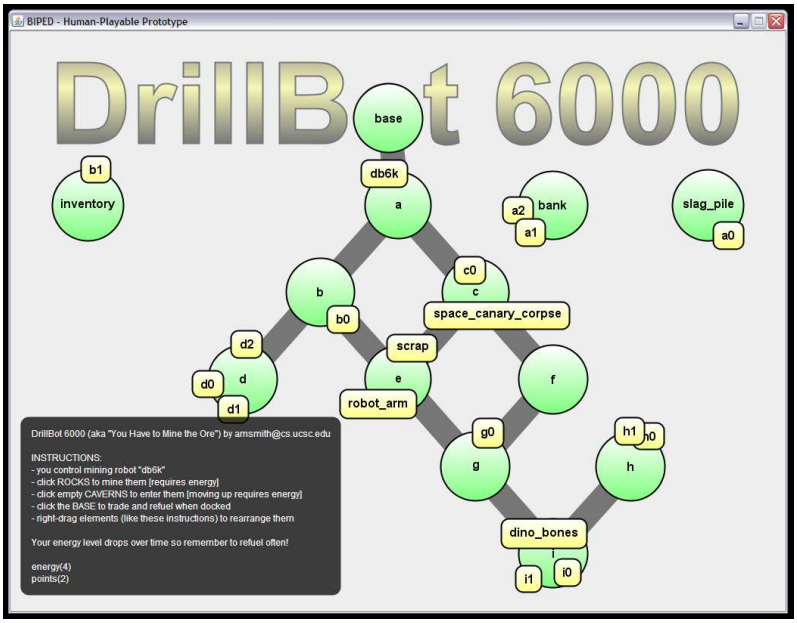

Overview

BIPED is the first system to give game designers simultaneous access to design backtalk from both traditional play testing with human peers as well as machine play testing using automated reasoning to uncover issues human testers overlook.

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Prototyping with BIPED

We have created a system that allows designers to concisely describe the mechanics and basic representation of their game in a declarative, elaboration-tolerant language. Using this game definition, we can automatically produce both a human-playable video game (illustrated above) as well as a formal rule system that is analyzable using automated reasoning tools, which can be used to find abstract game play traces (illustrated at right). To ease the transition from negotiable-rule, paper prototypes, BIPED embraces a board-game-like visual metaphor where tokens move between spaces on a game board with spaces connected by lines. Instructions, dynamic status text, and background music can help convey aspects of the game idea that are not represented at the board-game level.

Play testing with BIPED

The different forms of play testing afforded by BIPED game sketches give different forms of design feedback. Through machine play testing, designers get objective answers to design questions by finding abstract play traces (quickly showing possibilities), implied properties of game rules, exploits, and counterintuitive puzzle solutions. Through human play testing, subjective design questions can be answered by observing engagement, fun, or hesitation in response to live play.

```
happens(mine(a1),0).
happens(drain,1).
happens(drain,2).
happens(trade,3).
happens(mine(a2),4).
happens(mine(a0),5).
happens(down_to(a),6).
happens(mine(space_canary_corpse),7).
happens(mine(c0),8).
happens(down_to(c),9).
happens(down_to(f),10).
happens(up_to(c),11).
happens(up_to(a),12).
happens(down_to(c),13).
happens(down_to(f),14).
```

Try it for yourself!

Part of the BIPED system has been released on the web (linked above). Using the online version, any Java 6 compatible platform can be used to play with our game sketching language and perform human play testing using the resulting prototype. Currently, the machine play testing component of BIPED had too many dependencies to easily distribute on the web.