
Pragbot II Corpus & Mechanical Turk

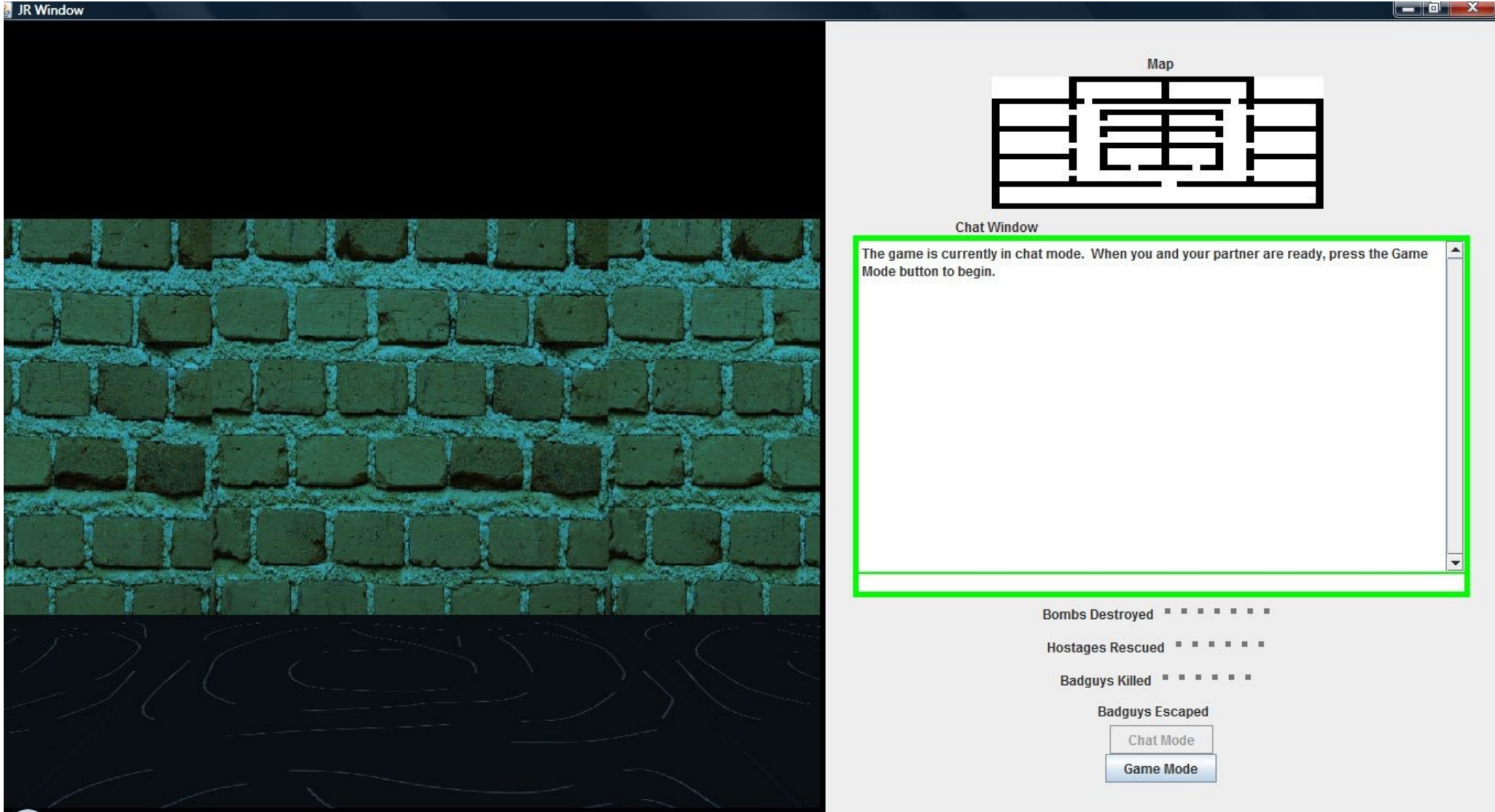
Oct 2011 Review

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Purpose

- We were tasked with collecting a corpus of data to study language interaction
- Three years ago, we presented Pragbot 1.0, which collected 100 transcripts
 - Thanks Karl Schultz and Chris Potts
- Last year, we presented Pragbot 2, which was a 3D version created by Chris Czyzewicz

Pragbot 2.1 Review

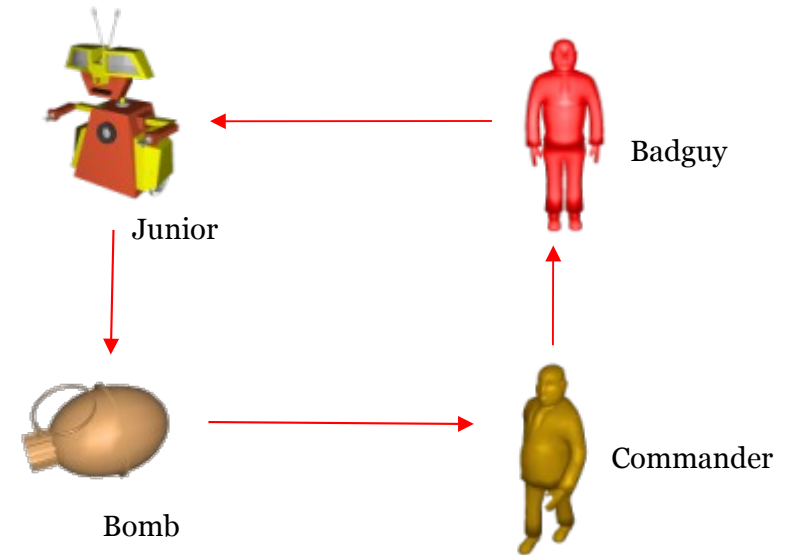


The screenshot displays the Pragbot 2.1 interface, which is divided into several sections:

- JR Window:** A window on the left side showing a 3D environment with a brick wall and a dark floor with white circular patterns.
- Map:** A top-down schematic diagram of the game map, showing a complex layout of rooms and corridors.
- Chat Window:** A window on the right side with a green border, containing the text: "The game is currently in chat mode. When you and your partner are ready, press the Game Mode button to begin."
- Game Statistics:** A section below the chat window showing progress indicators for:
 - Bombs Destroyed: 6 squares
 - Hostages Rescued: 6 squares
 - Badguys Killed: 6 squares
 - Badguys Escaped: 0 squares
- Mode Selection:** Two buttons at the bottom right: "Chat Mode" and "Game Mode".

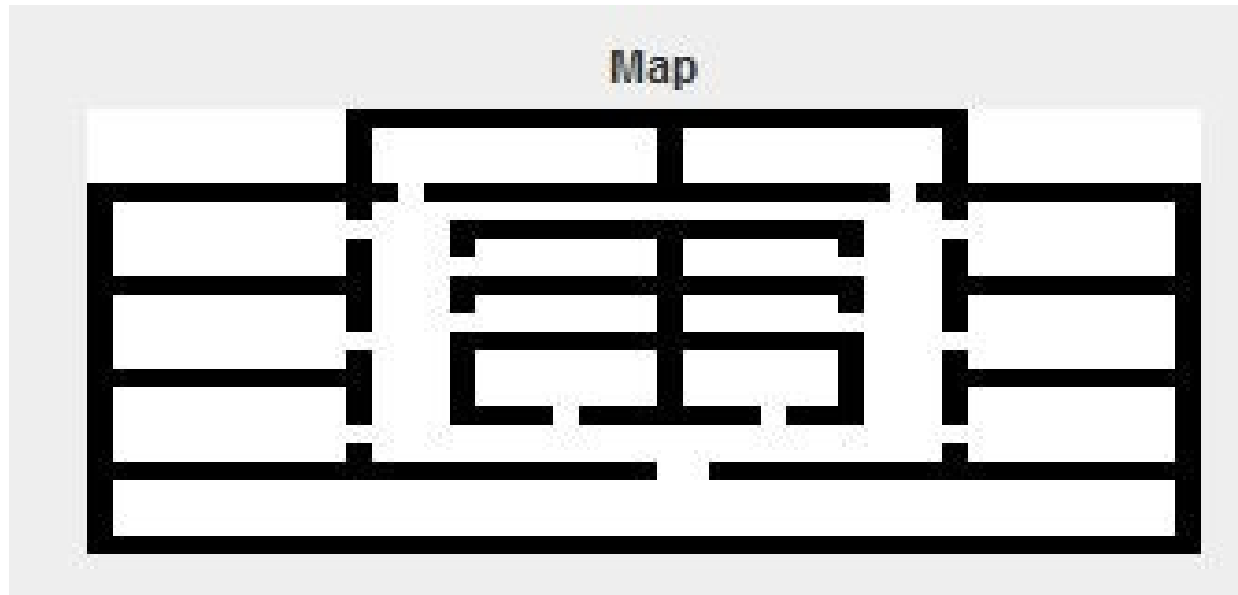
Pragbot 2.1 gameplay

- Two players coordinating to rescue hostages and destroy badguys
 - Keep Commander alive
 - Keep Junior functioning



- Players have to develop a strategy to keep the badguys from escaping

Pragbot 2.1 environment



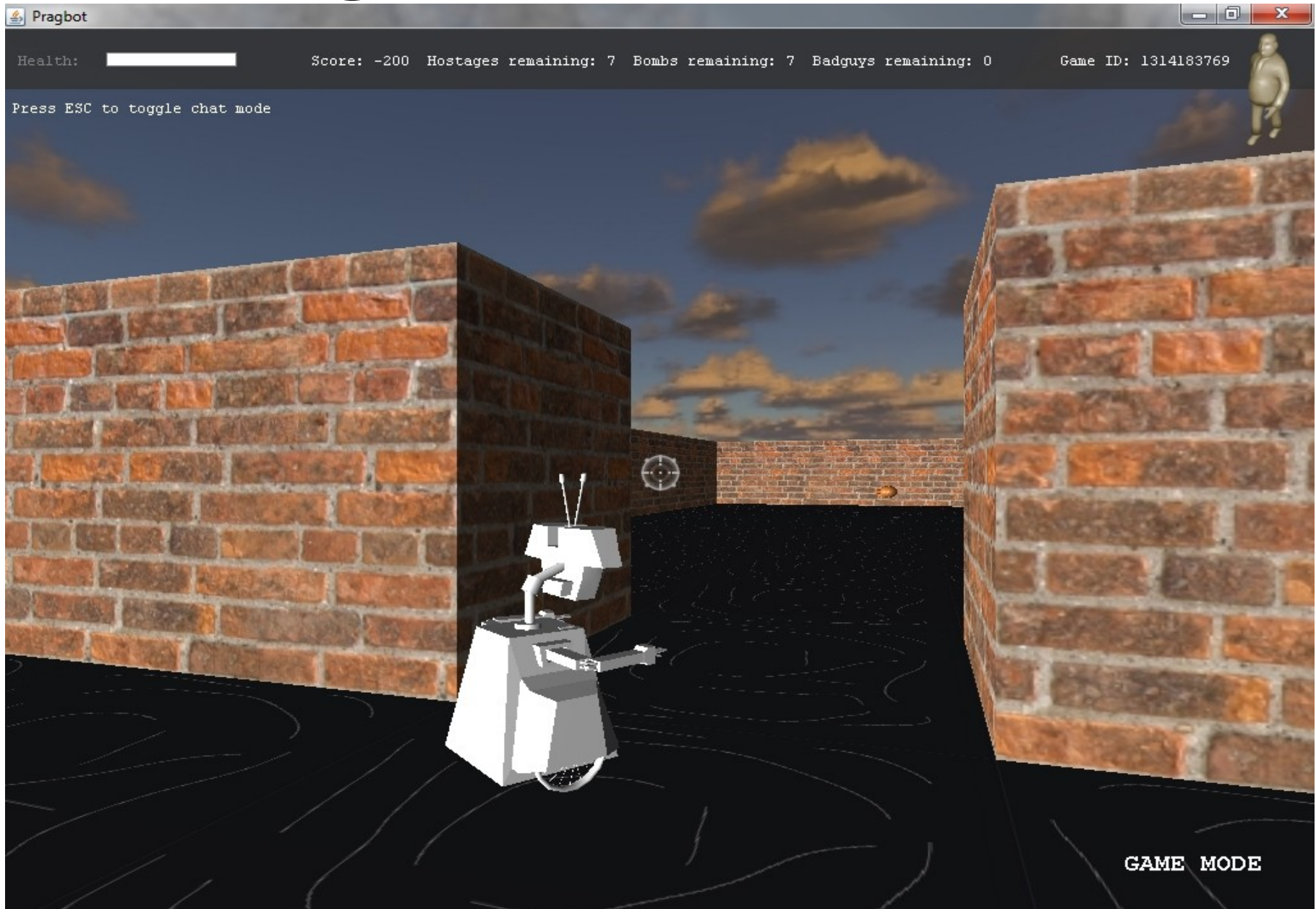
Pragbot 2.1 limitations

- Layout of objects in the environment never changed
- Badguy behavior was weakly dependent on the player's actions and not very interesting
- Overall, there was not enough feedback from the environment
- Unstable: Lots of residual bugs

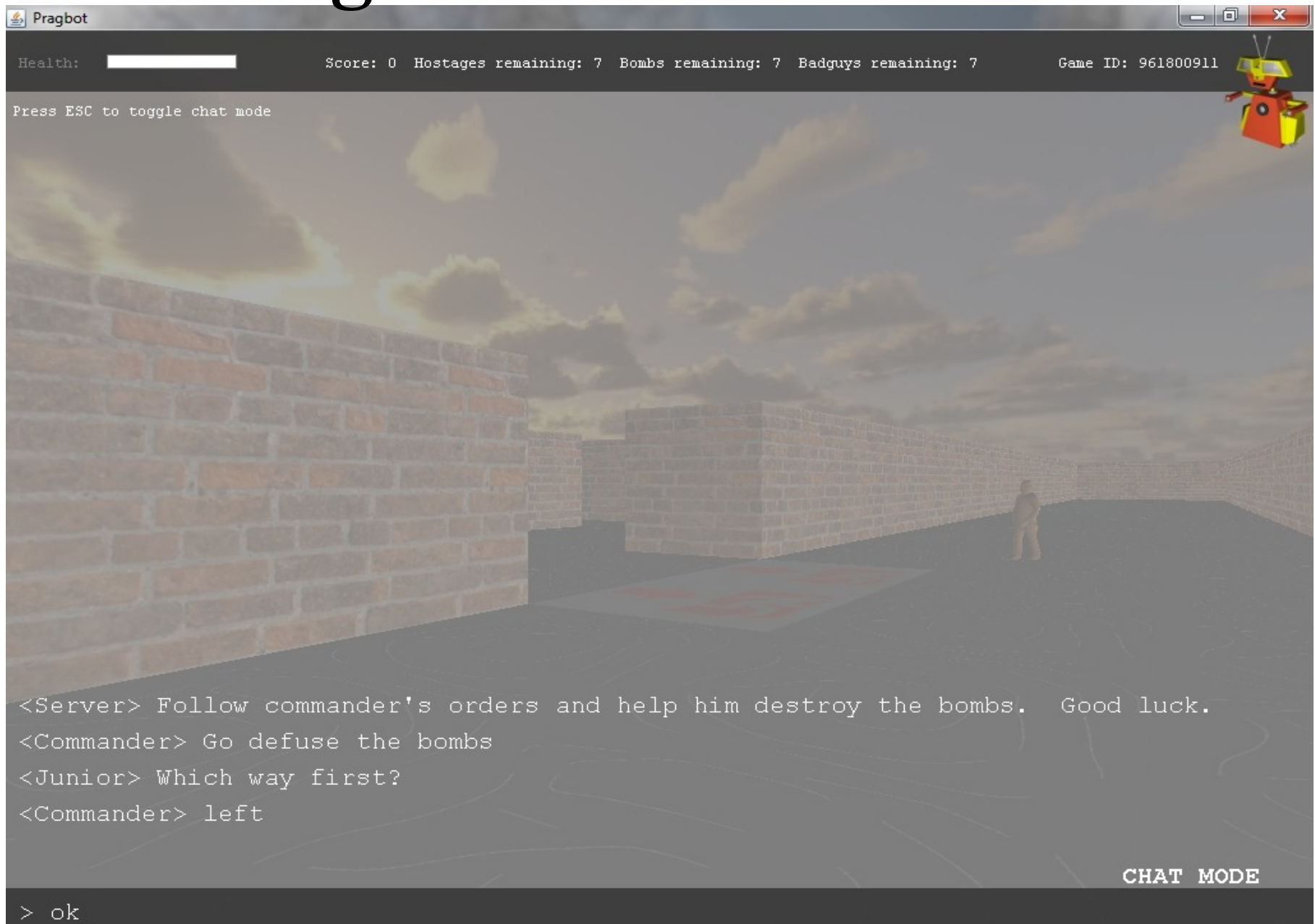
Pragbot 2.2 improvements

- Locations of badguys, hostages and bombs are randomized before every session.
 - Expert effects
 - Data is more generalizable
- Badguys exhibit goal-oriented behavior
 - Actively avoid Commander
 - Aggressively attempt to disable Junior
 - A* path-finding algorithm
- New user interface gives better feedback about how a player's actions alter the environment
 - Score

Pragbot 2.2 user interface



Pragbot 2.2 chat interface



Many sources of feedback contributed to the design (Victoria Schwanda)

Data Collection with Amazon Mechanical Turk

- Mechanical Turk connects requesters (us) and people who wish to be paid to do simple tasks
- Mechanical Turk has been an effective tool for collecting NLP data in the past.
 - Potts, 2009
 - Callison-Burch and Dredze, 2010
- Chris Potts demonstrated that Mechanical Turk can be used for collecting data in game environments.

How the participants find us

All HITs

1-10 of 1177 Results

Sort by: HIT Creation Date (newest first) GO

Show all details | Hide all details

EC Native Speaker			
Requester: Jonathan Marston	HIT Expiration Date: Oct 23, 2011 (2 days 23 hours)	Reward: \$0.01	HITs Available: 4
	Time Allotted: 2 hours 30 minutes		
A Survey about Your Basic Mathematical Skills (A 10 seconds questionnaire)			
Requester: Ling-Jyh Chen	HIT Expiration Date: Oct 27, 2011 (6 days 23 hours)	Reward: \$0.03	HITs Available: 341
	Time Allotted: 24 hours		
A Survey about Your Basic Mathematical Skills (A 1 minutes questionnaire)			
Requester: Ling-Jyh Chen	HIT Expiration Date: Oct 27, 2011 (6 days 23 hours)	Reward: \$0.03	HITs Available: 318
	Time Allotted: 24 hours		
Play a video game: Rescue hostages! Transcript will be used for linguistics research.			
Requester: Mitchell Marcus	HIT Expiration Date: Oct 27, 2011 (6 days 23 hours)	Reward: \$1.00	HITs Available: 4
	Time Allotted: 10 hours		
A Survey about Your Basic Mathematical Skills (A 30 seconds questionnaire)			
Requester: Ling-Jyh Chen	HIT Expiration Date: Oct 27, 2011 (6 days 23 hours)	Reward: \$0.03	HITs Available: 343
	Time Allotted: 24 hours		
A Survey about Your Basic Mathematical Skills (A 10 seconds questionnaire)			

Initial Data Collection

- We collected data from Mechanical Turk over 2 weeks
 - \$1 for each game played.
 - Restricted to US participants only, at least 18 years old
- Criteria for payment:
 - Positive score
 - Meaningful communication
 - \$0.50 bonus for very rich communication or a good score
- Results:
 - 136 completed sessions
 - 269 non-trivial transcripts
 - Many participants with negative scores had rich interactions

Sample Transcript

<Commander> Hello
<Junior> hi
<Junior> ready?
<Commander> Yes im ready now
<Junior> ok
<Commander> My name is steve. whats yours?
<Junior> jim
<Commander> cool. nice to meet you
<Junior> nice to meet you too
<Commander> lets start by following the right wall.
<Commander> does that make sense?
<Junior> ok
<Commander> go into the hallway to your right
and tell me what you see
<Commander> what do you see?
<Junior> ~~one bad guy but he disappeared~~
<Commander> any bombs?
<Junior> no the bad guy flipped me over I'm stuck
<Commander> on my way, you followed the your
right wall correct?
<Commander> i cleared the bad guy
<Junior> i followed the right wall then i saw the
bad guy on the left
<Commander> is the room to your right clear?
<Junior> as far as i can see yes

<Junior> thanks
<Commander> continue to the next room on your right
<Junior> nothing here
<Commander> okay, exit the room and continue right
down the hallway and
<Commander> enter the next room to your right
<Commander> report what you see
<Junior> ~~hostage and bomb~~
<Commander> is the bomb defused?
<Junior> yes
<Commander> nice work i will enter and save hostage
<Junior> what just happened
<Commander> i dont know i was hit
<Commander> ~~exit that room and continue to the hallway~~
<Commander> when in the hallway enter the next room
on your right
<Junior> which way from here
<Commander> to your right
<Commander> see anything?
<Junior> empty
<Commander> exit and work the next room to your right
<Commander> see anything?
<Junior> hostage is here i destroyed bomb
<Commander> any other bombs left?
<Junior> no

Website

- If you would like to try out Pragbot 2.2, you can go to the website and play a game
 - Plus we would love your transcript!
- <http://www.seas.upenn.edu/~muri/pragbot2.html>
- The initial informed consent form required by IRB.

Future Plans

- Immediate Corpus Collection using MTurk
- Annotation
 - Syntactic
 - Simple Discourse
 - Simple Speech Acts
- New Postdoc at UPenn: Ariel Diertani
 - Syntactic annotator for Penn-Helsinki corpora of Early Modern & Modern British English and the DARPA Ontonotes project.
 - PhD (5/11), UPenn, “Morpheme Boundaries and Structural Change: Affixes Running Amok”

Thanks!

Overviews of MTurk for language research :

Chris Potts. 2009. In defense of Amazon's Mechanical Turk. *Language Log*, March 15, 2009. Permalink: <http://languagelog ldc.upenn.edu/nll/?p=1233>

Chris Callison-Burch and Mark Dredze. 2010. Creating speech and language data with Amazon's Mechanical Turk. In *Workshop on Creating Speech and Language Data With Mechanical Turk at NAACL-HLT*.