

---

# Pragbot II Corpus & Mechanical Turk

Oct 2011 Review

Kenton Lee

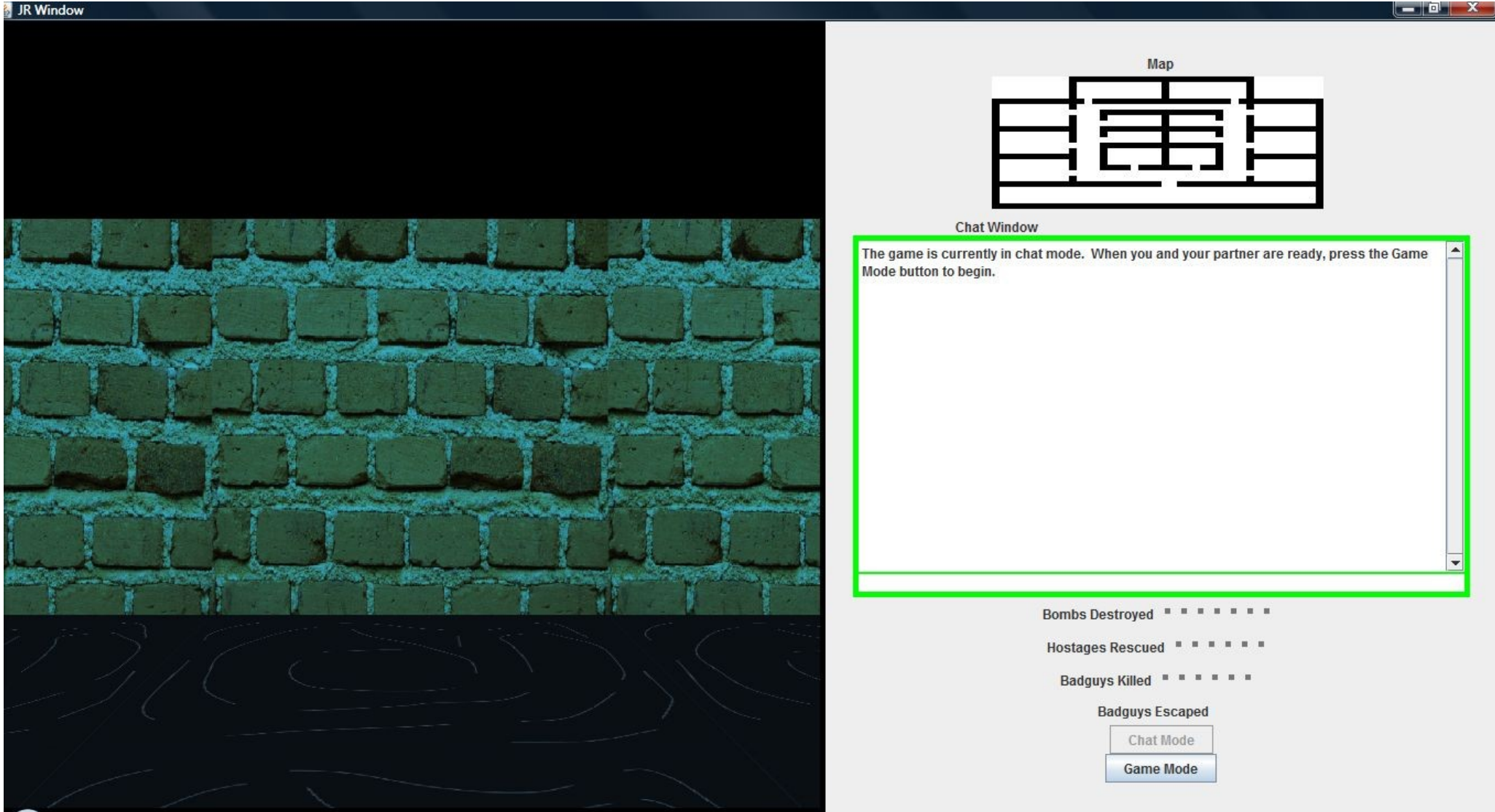
# Purpose

---

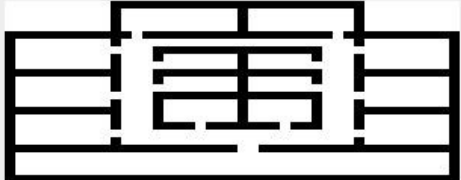
- We were tasked with collecting a corpus of data to study language interaction
- Three years ago, we presented Pragbot 1.0, which collected 100 transcripts
  - Thanks Karl Schultz and Chris Potts
- Last year, we presented Pragbot 2, which was a 3D version created by Chris Czyzewicz

# Pragbot 2.1 Review

JR Window



Map



Chat Window

The game is currently in chat mode. When you and your partner are ready, press the Game Mode button to begin.

Bombs Destroyed ■ ■ ■ ■ ■ ■ ■ ■

Hostages Rescued ■ ■ ■ ■ ■ ■ ■ ■

Badguys Killed ■ ■ ■ ■ ■ ■ ■ ■

Badguys Escaped

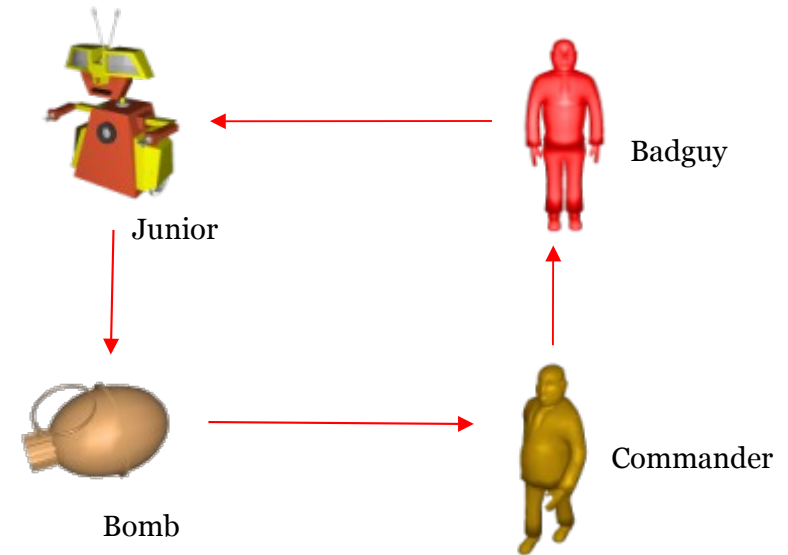
Chat Mode

Game Mode

# Pragbot 2.1 gameplay

---

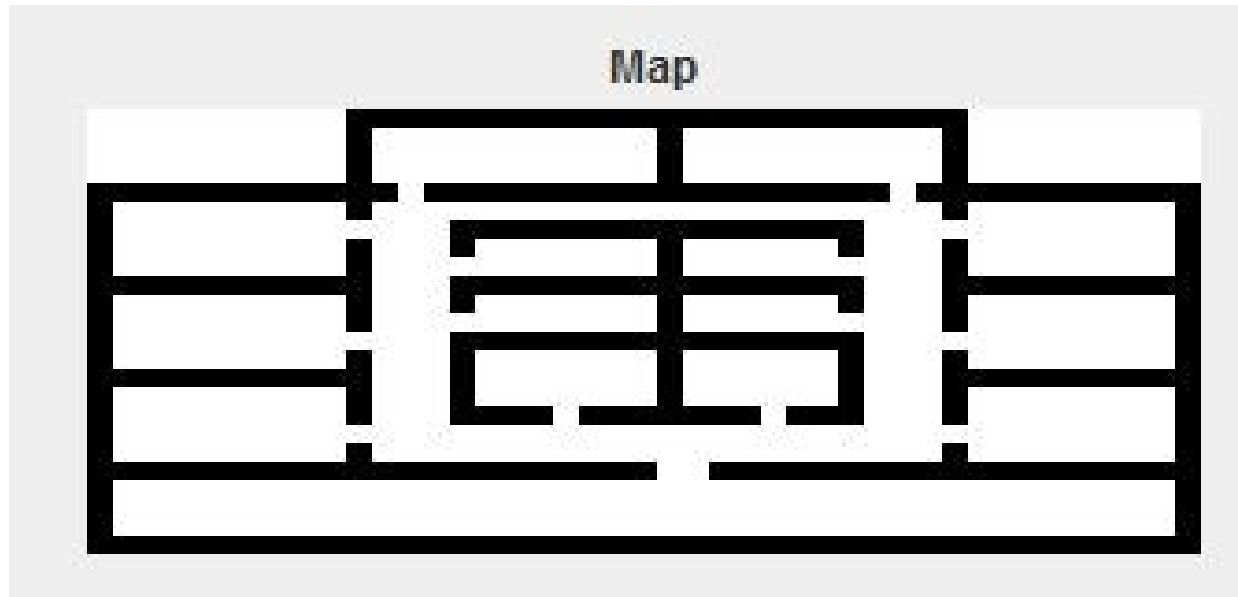
- Two players coordinating to rescue hostages and destroy badguys
  - Keep Commander alive
  - Keep Junior functioning



- 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

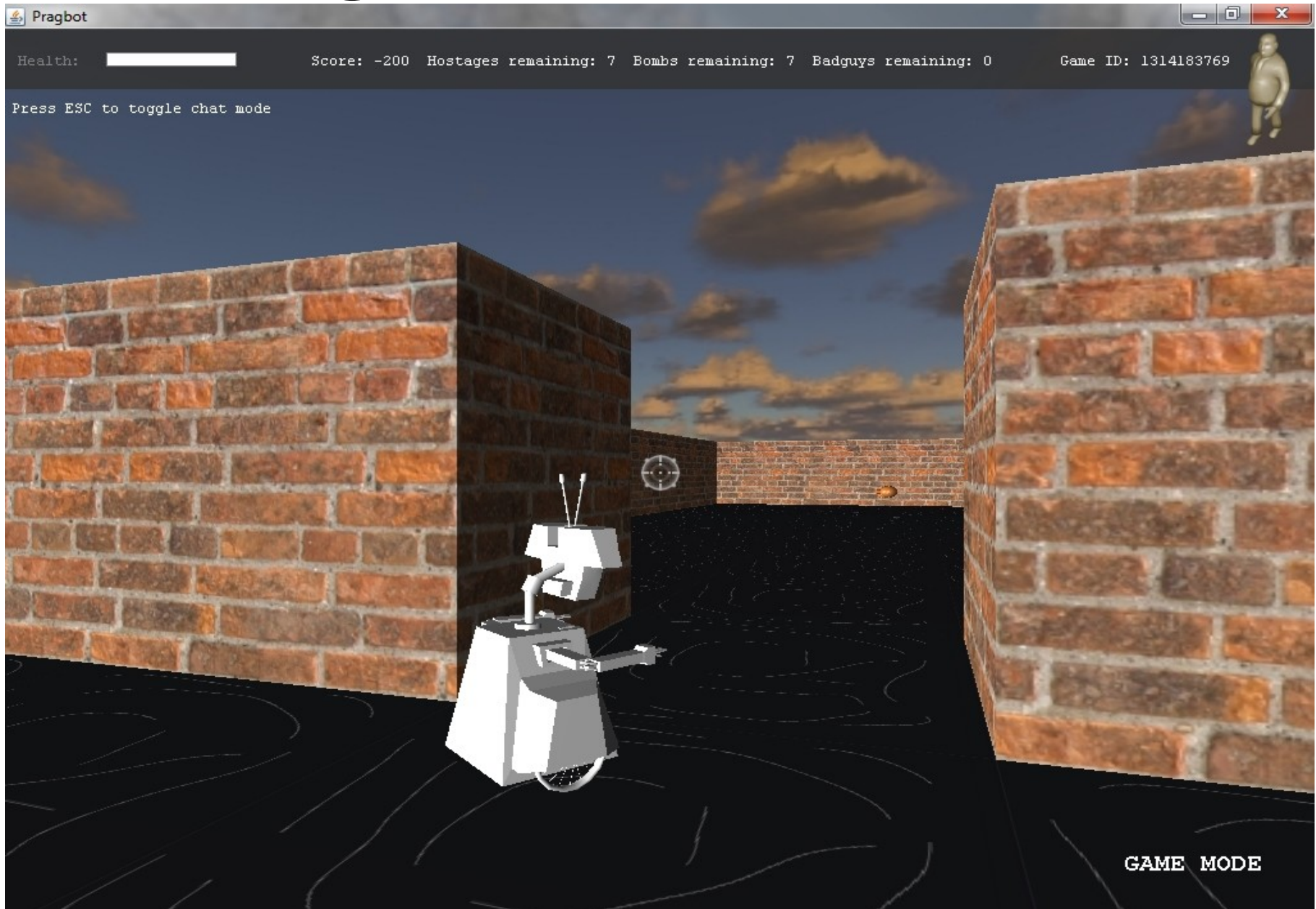
# Pragbot 2.2 improvements

---

- 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

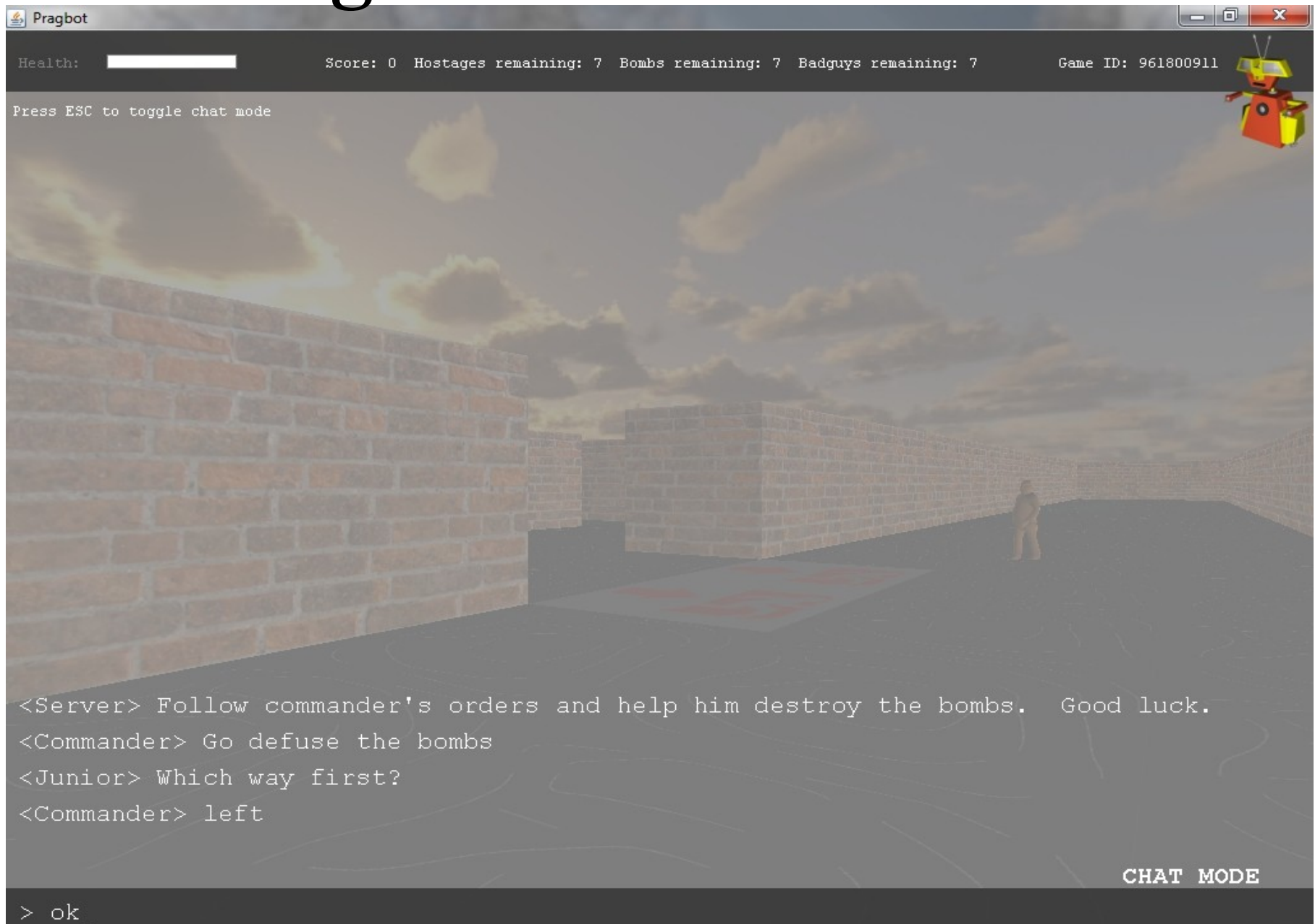


# Pragbot 2.2 user interface





# 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

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

# 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*.