

Challenge:

- How can robots reason about human (or robot) capabilities and limitations during multi-agent collaboration?
- How can we create a platforms for rapid testing and refining of algorithms for multi agent resource distribution?

Solution:

- Develop a collaborative Tetris system where multiple individuals can work to obtain the highest team score.
- Leverage the multi armed bandit(MAB) framework as a means for robots to learn about each individuals strengths and limitations.
- Deploy explored algorithm in different multi-agent collaborative scenarios.

Dr. Malte Jung¹, Houston Claure² ¹Principal Investigator, Department of Information Sciences, Cornell University ²Ph.D. Candidate, Department of Mechanical Engineering, Cornell University

i = 2 *i* = 3 $i_t \in [K]$ $r \in [0,1]^{K}$ t = 1, 2, ..., 1000



Develop



Test	
	¥

Co-Tetris: A Multiplayer Tetris Game

tored Features —		Ghost Pieces		
vidual Score ne State n Distribution m Score	-Game Time -Keys Pressed -Game ID mongoDB.		Control	Recommend
ribution Algorithm 2 • • 2 $iiiiiiiiiiiiiiiiiiiiiiiiiiiiiii$		Colla COLLA COLLA Mul	borate N	



- Open-source platform for multi agent experimentation.

- Results can be integrated into a robotics course curricula.

Scientific Impact:

- Potential areas of impact:
- -Search and rescue
- -Autonomous vehicles
- -Human-Robot Interaction

Broader Impact: