



Scripted AI for Overcooked!

by Anton Cosmin

Robert Loftin ~ Supervisor
Frans Oliehoek ~ Professor

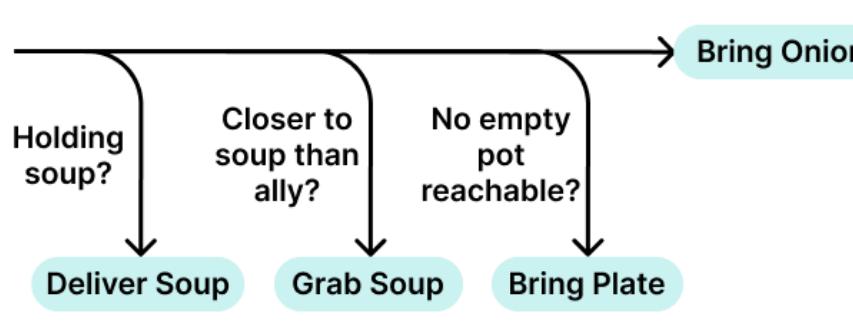


Fig1. 4 pictures of in game view of Overcooked-ai with color filter applied

1. Introduction



Overcooked-AI is a modified version of the original game, retaining core mechanics and cooperation but with reduced computational complexity. It provides a more discrete action space and simplified observation space, making it computationally lighter. It is used for research purposes, enabling more efficient human-AI cooperation studies.



2. Research questions

- How can cooperation fail, and what can we do to prevent these failures?
- Do specialized, hand-authored controllers perform better than those trained with different algorithms, such as population based learning or planning methods?

3. Methodology

- Define all aspects of the game by reading and understanding the codebase
- Create a hand-authored controller that is capable to cooperate with a human
- Evaluate the obtained controller
- Compare the evaluation with results obtained in other research papers



4. Scripted AI cooperating with the researcher

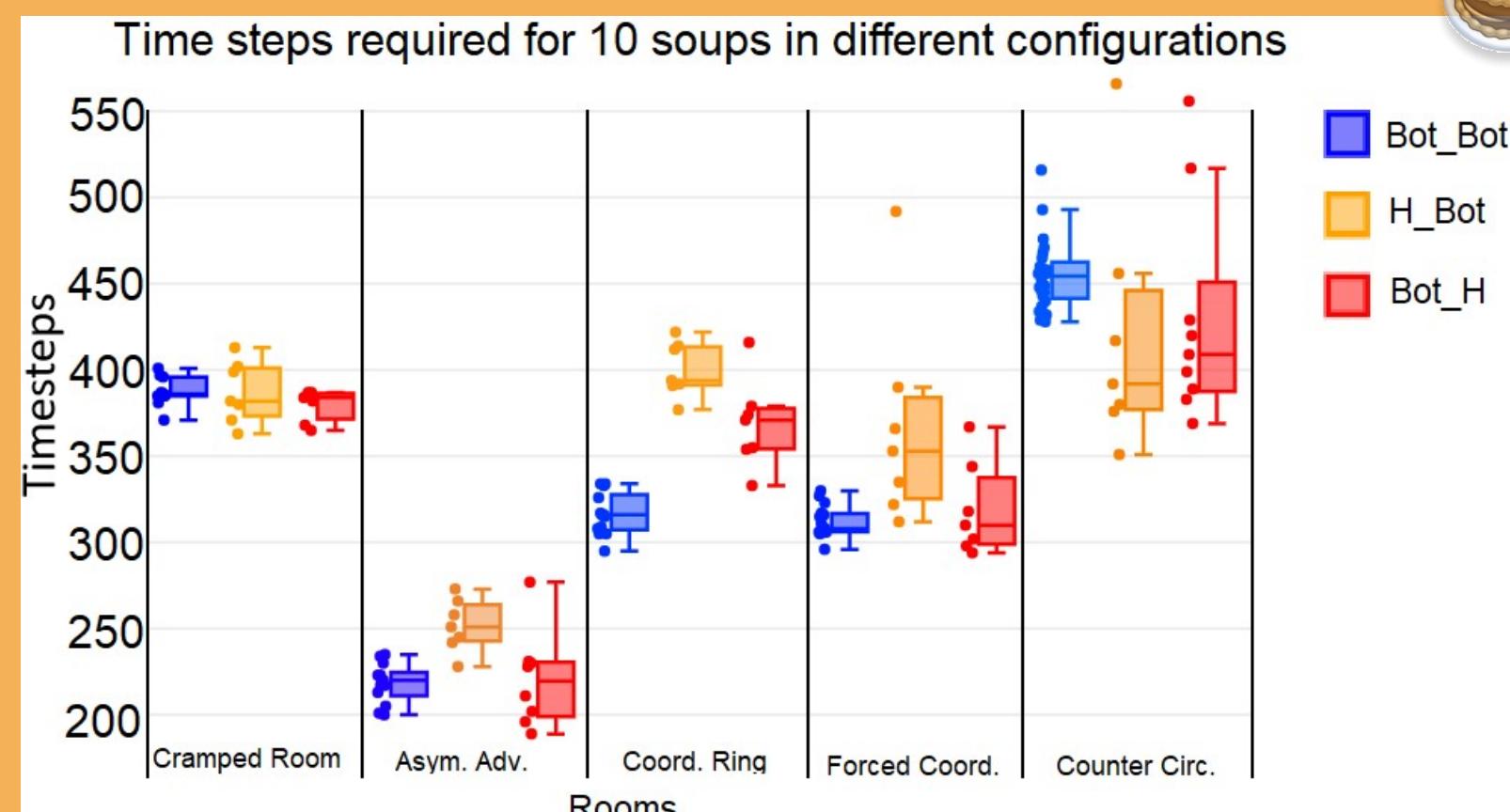


Fig2. Whisker plot of results obtained from the AI cooperating with the researcher

The aim is to develop a controller that combines simplicity with effective cooperation with the other player. This controller employs a decision tree framework, where the output corresponds to a behavior rather than a direct action. The final outcome relies on deriving the action from the behavior.

5. Results and conclusions



After developing a scripted AI that excels at specific tasks in the Overcooked environment we compare the performance of the two alternative approaches.

Literature and Hand-authored Controller:

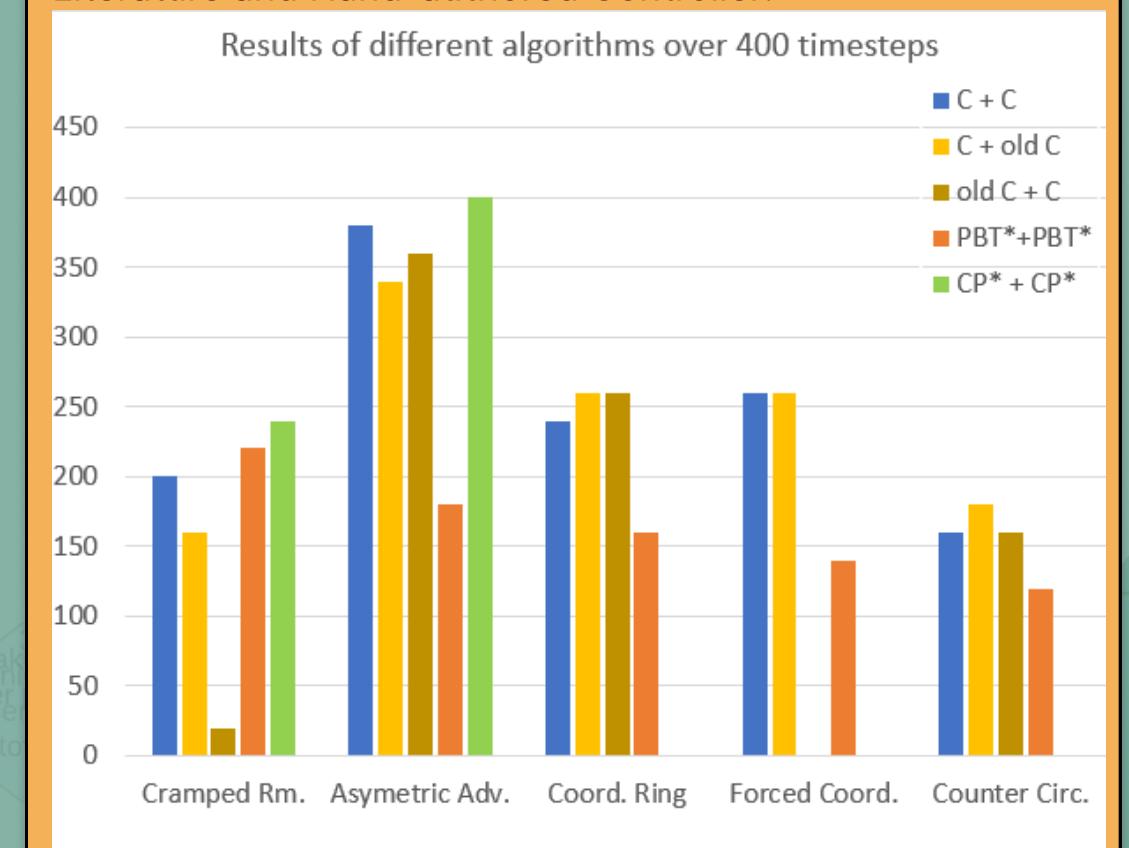


Fig4. Chart representing results obtained for the hand-authored controller (C) and results from Literature (PBT* and CP* [1])

The controller can act as a reference point for designing AI controllers. It can serve as a baseline for developing and testing more advanced AI algorithms by providing a clear comparison in terms of task performance.

