

Reinforcement Learning in Real-Time Strategy Games

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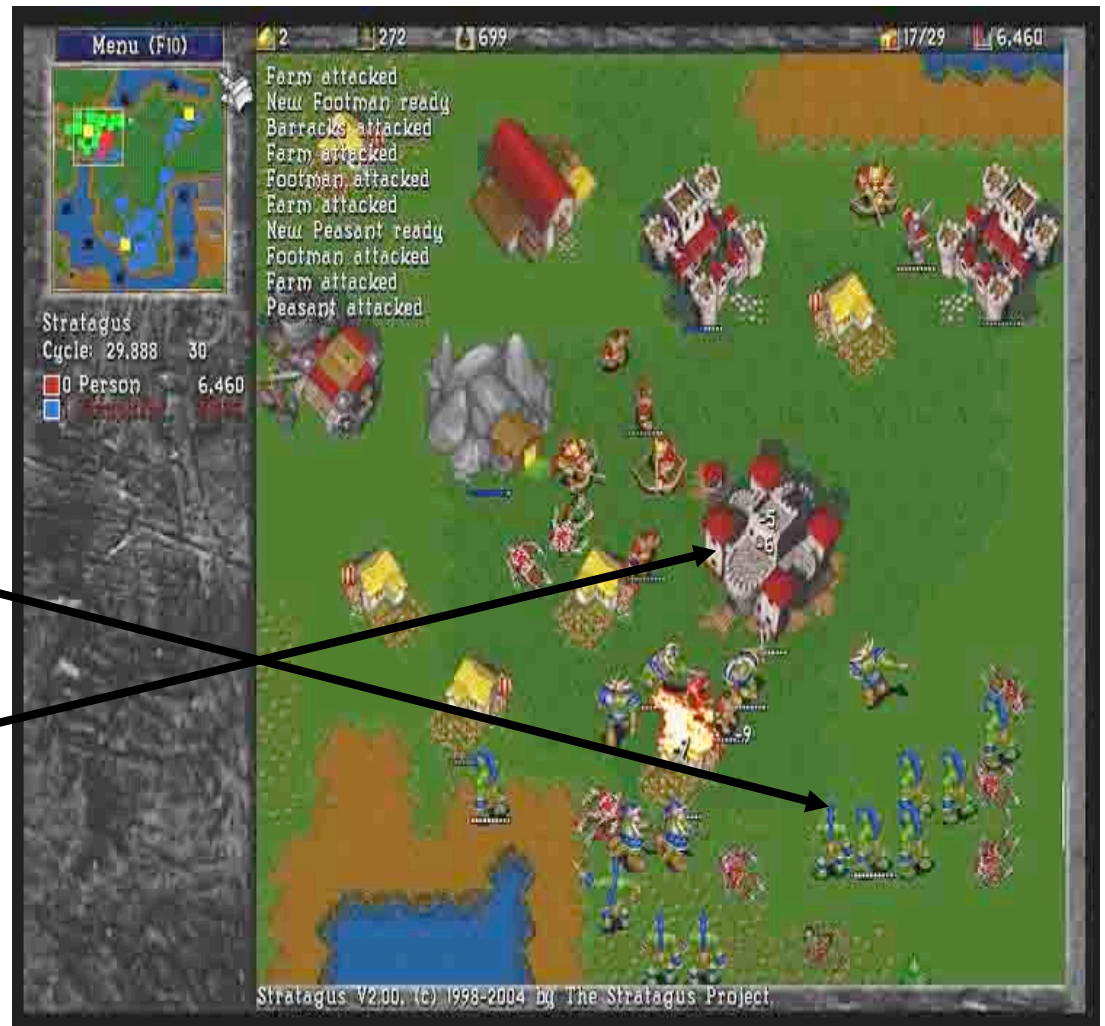


Reinforcement Learning

- Framework based on punishments and rewards
- Maximize the frequency of rewards
- Minimize the frequency of punishments
- RL is popular research area because:
 - RL can solve wide variety of complex problems
 - RL will find close to optimal solution
 - RL learns as it interacts with the environment

Real-Time Strategy (RTS) Games

- category of strategy games that usually focus on military combat.
- require the player to control armies
- Typical game actions in RTS games include constructing buildings, researching new technologies, and combat.



Current Status

- Implemented RL on an RTS game
- AI player adapts to adversary's tactics
- Performed experiments in which RL defeated some tactics frequently used in these games (e.g., soldier rush)
- Exploring extensions including combination with planning techniques