Team 420

Final Project

Problem Statement

- Environment of a city (matrix AxA) occupied by drug dealers (Agents)

- Agents aim at maximizing their assets

- Agents completely independent (no formal agent-agent contracts)

- Random environmental events (law enforcement)

- Simulation divided by rounds

Properties

- Territory

- Assets

- Respect

Message Types

- Occupy()

- Attack()

- Negotiate()

Hypotheses

- After enough rounds in a low-hostility environment, the remaining agents will be strong enough that they will behave as a "gang", accordingly to the definition of "gang" that has been provided - We call this hypothesis "L'union fait la force";

- In a low-hostility environment, the system will converge to a final steady state, where no changes in territory will be observed, no matter how many rounds have passed;

- After enough rounds, accumulated Assets will never reach zero again, and the profitability will be distributed so that every agent has enough resources to deal with law enforcement activities . In this state, we deem the city as "dominated".

Experiments

- Reward factor for each territory/income

- Randomness and Strength of Law Enforcement Raids

- Frequency/Likelihood of new drug dealers' migration into empty slots

- Size of map

- Turnover and Recovery rates

- Respect Factor on Victory

- Randomness Factor on Victory

- Value of Certainty of Negotiation over Uncertainty of Attack (Hostility)

- Amount of Respect earned through each Action

- Initial number of Agents