

Modeling the Tragedy of the Commons Using Agent-Based Modeling

Computer Systems Lab 2008/2009
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Abstract

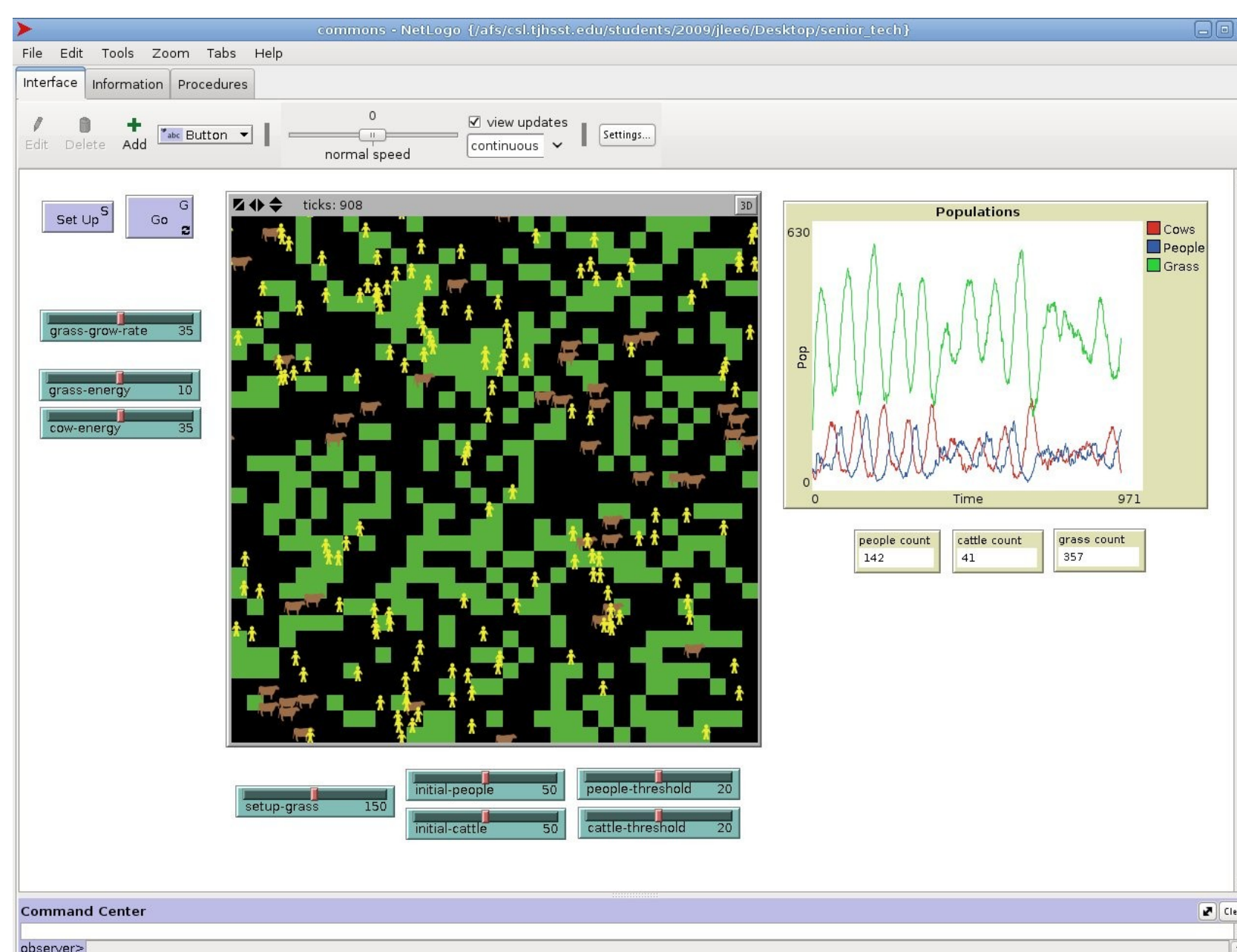
The Tragedy of the Commons is a social scenario wherein a community of individuals acting selfishly will ultimately lead to the downfall of the community as a whole. My project models the tragedy of the commons using agent-based modeling. By modifying the environment - for example, by modifying the way populations behave, or by instituting some other influence in the environment which would alter the behavior of my populations - I hope to make the environment both prosperous and stable.

Introduction

The Tragedy of the Commons is a problem which is highly pertinent to the world at large today. Any environment facing a limitation on its growth must either deal with the tragedy or submit to its consequences. For example, one way our nation deals with pollution is by putting garbage in designated areas. However, those areas are a finite resource. When individual groups each contribute to the issue of pollution, it mounts into an exponentially larger issue. Finding a practical solution to this problem would help deal with many similar situations worldwide.

Testing and Analysis

If my program incorporates reasonably realistic behavior into my agents (cattle, people, grass) and then graph their populations, there are certain growth patterns I can expect to see. Namely, the populations should vary directly and inversely with one another. The environment may be tweaked to produce different effects. For example, setting grass to provide greater amounts of energy to the cows should result in greater population fluctuations over time.



A typical demo of the program