Emergent Resource Based Supply and Demand in a Complex System

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Abstract. A simple economy based on the gathering, bartering, and consuming of resources.

1   Introduction

We have a mutual interest in the emergent patterns of supply/demand economics present in our society. With this project, we are not just looking for a number-crunching, graph-producing model. We also want to create emergent movement, grouping, and settling behaviour with our agents that is easy to observe.

2   Related Work

While the field of agent-based economics simulations has existed for a few decades[1], we have not found other work which reflects all aspects of our model. We found two NetLogo models[2][3] which are related in that they have visuals, but their scope is limited.

3   Project Details

Each agent belongs to one of many distinct groups which requires a specific resource to survive. The foundation of the simulation is that each agent is not able to gather the resource they desire, rather they must trade for it. We plan on experimenting with the trading mechanics (which should follow simple rules) in order to produce emergent economic behaviour.

4   Software Tools

We will be using Unity 3D Game Engine[4] and Blender[5] for modelling.

5   Time line

We hope to have the initial setup done by our sneak peak presentation. Afterwards, we will introduce and experiment with various parameters leading up to the final presentation.

References

1. Agent-Based Computational Economics: `https://en.wikipedia.org/wiki/Agent-based_computational_economics`
2. Simple Economy model in NetLogo 6.0 Models Library: `http://ccl.northwestern.edu/netlogo/models/SimpleEconomy`
3. Band Reserves model in NetLogo 6.0 Models Library: `http://ccl.northwestern.edu/netlogo/models/BankReserves`
4. Unity 3D Game Engine: `https://unity3d.com/`
5. Blender: `https://www.blender.org/`