Functional Agent-Based Computational Economics

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Abstract

In this paper we study various market-models and how they can be described in a mathematical and functional way. From this we derive a theory for functional agent-based market-models and discuss their mapping to the pure functional computation in Haskell, Agda and Type Theory. It is important to note that we root our research in the field of agent-based computational economics and are explicitly interested in constructive approaches.

1 Motivation

TODO: book of agent-based NASDAQ stock market model
Tesfatsion (2006) gives a broad overview of agent-based computational economics (ACE), gives the four primary objectives of it and discusses advantages and disadvantages. She introduces a model called *ACE Trading World* in which she shows how an artificial economy can be implemented without the *Walrasian Auctioneer* but just by agents and their interactions.

2 Research Questions

- What is the most general agent-based market model? - Can this market model be extended to be constructive? - Functional artificial economies

References

Tesfatsion, L. (2006). Agent-Based Computational Economics: A Constructive Approach to Economic Theory. Handbook of Computational Economics, Elsevier.