A model for pure functional agents

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Abstract

I want to develop a powerful pure functional agent-model which allows convenient multi-step conversations in continuous time as i feel yampa is not the perfect match

1 Introduction

Start from wooldridge 2.6 (look at the original papers which inspired the 2.6 chapter) and weiss book and the original papers those chapter is based upon. Look into denotational semantics of actor model. Look also in functional models of czesar ionescu. why: this is the major contribution of my thesis and is new knowledge. Must find intuitive, original and creative approach.

no concurrent execution: deterministic
deterministic: can use random-numbers but to be reproducible/deterministic one has to specify the same seed or even provide an own RNG-implementation (which is easily possible using the RNG in haskell)
could use STM for state-propagation to other agents
read Improving Performance of Simulation Software Using Haskell's Concurrency & Parallelism
Sketch EDSL for ACE model of interest or maybe more general ACE models.

2 Model

use yampa as basic framework for "mainloop" with continuous time where each agent has a signalfunction which is triggered when he receives a message or conversation request. in a conversation all other agents are then halted and only the 2 are communing, then time continues. all is running in sync and messages are transfered via non-concurrent STM so no rollback/retry/... stuff is needed. also need to deal with how new agents are created and inserted into the system and how existing ones can be removed when died