Pure Functional Programming in Agent-Based Simulation

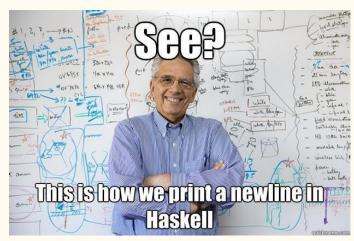
Supervisors: Dr. Peer-Olaf Siebers, Dr. Thorsten Altenkirch

Jonathan Thaler

General research topic

• Functional Reactive Agent-Based Simulation

- Haskell Library built on Yampa
- Examples: full Sugarscape, Agent_Zero, SIR, Heroes & Cowards,
 Wildfire, Schelling Segregation....
- Benefits (so far)
 - Continuous & discrete time semantics in ABS
 - Implementation closer to specification
 - Easier to reason about correctness
- Drawbacks (so far)
 - Performance
 - Learning curve



Current research activities (2nd Year)

- Writing 2 papers on Functional Reactive ABS
 - Functional programming community
 - Agent-Based Simulation community
- Correctness and Robustness
 - Reasoning
 - Testing
 - Verification

