Synchronous Communication in FRP

TODO

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ABSTRACT

TODO: conference e.g. Haskell 2019?

TODO: write introduction: why do we need it e.g. ABS TODO: take synchronous PURE interactions from Sugarscape and generalise them TODO: write technical heart: describe how we do it and what the benefits are TODO: write discussion: why do we need it TODO: write background TODO: write conclusion and further research (dependent types, shallow encoding, indexed monad)

Inspired by method calls in current object-oriented programming we develop a synchronous communication mechanism across signal functions. Potential use-cases are in agent-based simulation where agents need to interact synchronously with each other.

KEYWORDS

Agent-Based Simulation, Functional Reactive Programming, Property-Based Testing, Haskell

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1 INTRODUCTION

what if it calls the same MSF it is currently in? its recursion

Main message: method-call emulation in functional programming contribution: propose mechanisms to achieve this in a clean way in a Monadic FRP implementation like Dunai

discuss rolling back of actions which is easy with yampa SF but not possible in general in a MSF due to monadic side-effects limits of recursive interactions?

2 RELATED WORK

TODO: Virtualizing Real-World Objects in FRP [2] TODO: Wormholes: Introducing Effects to FRP [1]

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[2] Daniel Winograd-Cort, Hai Liu, and Paul Hudak. 2012. Virtualizing Real-world Objects in FRP. In *Proceedings of the 14th International Conference on Practical Aspects of Declarative Languages (PADL'12).* Springer-Verlag, Berlin, Heidelberg, 227–241. https://doi.org/10.1007/978-3-642-27694-1_17

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