Reactive systems are often formally modelled in one of two ways: in a process calculus such as the π-calculus, in terms of message-passing; or as a labelled transition system (LTS), in terms of a set of states and a transition model. The latter representation is amenable to automata-theoretic algorithmics, but classic formulations cannot effectively capture real-world problems over unbounded domains. This can be mitigated by expressing the LTS of a process as a fresh-register automaton (FRA).

This dissertation builds on prior work in generating the LTS of a π-calculus model represented as an FRA. The aim of the project is to create a model checking tool that adapts known bisimulation algorithms to FRA representations. Using a custom implementation of a classic partition refinement algorithm due to Kanellakis and Smolka, the tool decides whether simple π-calculus models are bisimilar, and if so visualises sets of bisimilar states in the LTS.