

# Abstract

Complex concurrent systems are often modelled using formal mathematical frameworks called process calculi, such as pi-calculus, to facilitate a deeper understanding of their complexities. These frameworks enable the analysis and reasoning of concurrent systems. Representations of the system interactions can be depicted through directed graphs, such as labelled transition systems, which aid in visualising and exploring the possible states and transitions within the system. PIFRA, a tool utilising a modified syntax of pi-calculus, generates intricate labelled transition system graphs based on provided models through said syntax.

This dissertation proposes and implements a visual language utilising blocks as an alternative means of constructing pi-calculus models for PIFRA. The language aims to be user-friendly, catering to novices, while retaining the ability to represent any pi-calculus construct. Additionally, it assists in crafting accurate models by ensuring well-defined name scoping and intentional name usage, thereby reducing the likelihood of errors such as typos.