Unit tests are not enough to show that software is safe!

MARVeLus tells you what you need to know to check that a critical software implements its specifications.

**Introduction**

- Cyber-physical systems (CPSs) are composed of software that interacts with the environment.
- Unit testing complex software might not cover all scenarios.
- Formal verification provides rigorous tools to prove software safety.
- Synchronous programming languages have been used in CPSs.
- Refinement types have been used for verification.
- This project combines synchronous programming with refinement types into MARVeLus: a tool to prove CPSs safety properties.

**Algorithm**

Front-end

Typing

MARVeLus

Back-end

External Solver

Z3

Method for Automated Refinement-Type Verification of Lustre (MARVeLus)