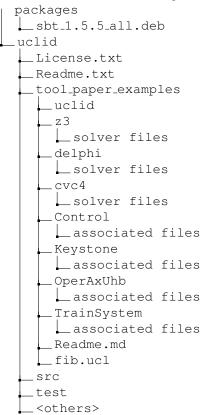
Artifact for Paper UCLID5: Multi-Modal Formal Modeling, Verification, and Synthesis

Elizabeth Polgreen^{1,2}, Kevin Cheang¹, Pranav Gaddamadugu¹, Adwait Godbole¹, Kevin Laeufer¹, Shaokai Lin¹, Yatin A. Manerkar^{1,3}, Federico Mora¹, and Sanjit A. Seshia¹

- $\begin{array}{cc} & ^{1} \ \ UC \ Berkeley \\ ^{2} \ \ University \ of \ Edinburgh \end{array}$
- University of Michigan

1 Setup

The submission has the following structure:



The packages directory contains the sbt Debian package which is required to build uclid from source, it is not required for running uclid using the binaries that

we have provided. The uclid directory is a snapshot of the uclid GitHub repository at commit add commit. The tool_paper_examples folder is self contained for running the tool on the examples with the provided binaries (see Running with prebuilt binaries below). To begin, copy the packages and uclid directories into the \$HOME directory of the VM.

Running with prebuilt binaries (recommended) The tool_paper_examples directory is self contained with prebuilt uclid and external solver binaries as well as the relevant examples mentioned in the paper. Please change move into this directory and follow the instructions given in Section 2

Building from source The supplied sbt Debian package is only required if you wish to build uclid from source. Start by installing sbt by running sudo dpkg -i sbt_1.5.5_all.deb from the packages directory. Then from the uclid directory, follow the instructions given at https://github.com/uclid-org/uclid#compiling-uclid5. After doing so,

2 Running the examples

Move into the tool_paper_examples directory. This directory consists of the following:

- The prebuilt binary for the tool uclid
- The prebuilt binaries for the external solvers z3, cvc4 and delphi in their respective directories
- Four test-examples directories: Fib, Control, TrainSystem, OperAxUhb, and Keystone

To run example examplename, run the script ./run_<examplename> from the tool_paper_examples directory. We now describe each of these examples in more detail:

- 2.1 Fib
- 2.2 Control
- 2.3 TrainSystem
- 2.4 OperAxUhb
- 2.5 Keystone