

Artifact for Paper

UCLID5: Multi-Modal Formal Modeling, Verification, and Synthesis

Elizabeth Polgreen^{1,2}, Kevin Cheang¹, Pranav Gaddamadugu¹, Adwait Godbole¹,
Kevin Laeuer¹, Shaokai Lin¹, Yatin A. Manerkar^{1,3}, Federico Mora¹, and
Sanjit A. Seshia¹

¹ UC Berkeley

² University of Edinburgh

³ University of Michigan

1 Setup

The submission has the following structure:

```
├── packages
│   └── sbt_1.5.5_all.deb
├── uclid
│   ├── License.txt
│   ├── Readme.txt
│   └── tool_paper_examples
│       ├── uclid
│       ├── z3
│       │   └── solver files
│       ├── delphi
│       │   └── solver files
│       ├── cvc4
│       │   └── solver files
│       ├── Control
│       │   └── associated files
│       ├── Keystone
│       │   └── associated files
│       ├── OperAxUhb
│       │   └── associated files
│       ├── TrainSystem
│       │   └── associated files
│       ├── Readme.md
│       └── fib.ucl
├── src
├── test
└── <others>
```

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