Synthesizing Symmetric Lenses: Artifact Evaluation

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1 SETUP ENVIRONMENT

1.1 Virtual Machine Environment (recommended)

To make validation easier, we provide the Artifact Evaluation Committee with a virtual machine that has all components installed. Setup for the virtual machine environment detailed below:

(1) Install a Virtual Machine Manager (we tested with VirtualBox)
(2) Download our virtual machine image (SymmetricLensSynthesis.ova in https://drive.google.com/drive/folders/1en7-K6Kxp7MvF3Z1GGfpCDBIKuF-84YM)
(3) Load our virtual machine from your virtual machine manager

We suggest the committe dedicate at least 8GB RAM to this environment.
The user for the virtual machine is ae, with password 2019.

1.2 Custom Environment

If you want to install on a custom environment, certain programs and libraries must be installed. We provide the commands for installation in Ubuntu 16.04.6 in parenthesis next to the program or library name.

(1) Install opam (sudo apt install opam; opam init; eval ‘opam config env‘; opam update)
(2) Install necessary system packages (opam depext conf-m4.1)
(3) Install OCaml’s JBuilder (opam install jbuilder)
(4) Install OCaml’s Core (opam install core)
(5) Install OCaml’s Menhir (opam install menhir)
(6) Install OCaml’s OUnit (opam install ounit)
(7) Install OCaml’s ppx_deriving (opam install ppx_deriving)
(8) Install OCaml’s ppx_hash (opam install ppx_hash)
(9) Install python-pip (sudo apt install python-pip)
(10) Install Python’s EasyProcess (pip install EasyProcess)
(11) Install Python’s matplotlib (pip install matplotlib)
(12) Install Python’s tk (sudo apt install python-tk)
(13) Install Python’s numpy (sudo apt install numpy)
(14) Download the codebase
(git clone https://github.com/Miltnoid/SymmetricLensSynthArtifactEval.git)

2 TOOL VALIDATION

2.1 Simple Validation

To validate: navigate to the directory the codebase is installed in (/home/ae/SymmetricLensSynthArtifactEval in the virtual machine). Then run the following command: "make regenerate-data"

After this command is run, the figures will be present at the following locations:

- Figure 6 will be present at $/generated-graphs/times.eps
- Figure 7 will be present at $/generated-graphs/times_bijective.eps
- Figure 8 will be present at $/generated-graphs/metrics_importance.eps

The command "make regenerate-data" will take a few hours to complete. It must run to completion for the data to be saved.

The full data from the runs will be aggregated at $/generated-data/data.csv

2.2 Directory Information

If the artifact committee want to do more in-depth testing, we provide information on the individual project directories. Boomerang can be built by running "make" in the $/boomerang directory, and run with ./boomerang.exe.

$/boomerang. Boomerang enhanced with symmetric lenses is present in the program directory. The optician source code is provided in $/boomerang/optician . The directory $/program/examples contains example boomerang programs, and the directory $/program/examples/synth_examples contains examples using synthesis.

$/generated-data. After data is created by the individual tests, it is then combined and placed into $/generated-data/data.csv.

$/generated-graphs. After data is created by the individual tests and combined into $/generated-data/data.csv, the data is converted into graphs and placed into $/generated-graphs.