Automata Learning with an Incomplete Teacher (Artifact)

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Abstract
We provide an implementation of the automata learning software described in the associated ECOOP article. In particular, the artifact is a Docker image with the source code for nerode and nerode-learn, along with the scripts and benchmark inputs needed to reproduce the experiments described in the paper.

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Evaluation Policy The artifact has been evaluated as described in the ECOOP 2023 Call for Artifacts and the ACM Artifact Review and Badging Policy.

1 Scope
This artifact contains the OCaml implementation described in Section 8 of the associated ECOOP paper. The Docker image includes everything required to build the software and reproduce the experiments in the evaluation of Section 9 of the paper.
Getting Started

After downloading the artifact image, in order to start it, run:

```bash
$ docker load < imat-artifact-image.tar.gz
$ docker run -it imat/base
```

At this point, there is a README in the current working directory of the running Docker image that will guide a user in the basics of the software and reproducing the results of the paper.

Content

The artifact package includes:
- Source code for `nerode`, a package for various constructions of finite automata and regular expressions.
- Source code for `nerode-learn`, a package for implementing learning algorithms for automata, including the learner described in the paper.
- A package for interacting with the Z3 SMT solver [1] from an OCaml program.
- The dependencies required for compiling and running the above.
- Benchmarks (i.e., example inputs) due to Lee, So, and Oh [2], and Oliveira and Silva [3].

Getting the artifact

The artifact endorsed by the Artifact Evaluation Committee is available free of charge on the Dagstuhl Research Online Publication Server (DROPS). In addition, the current version of the source code for `nerode` and `nerode-learn` is also available on GitHub at: [https://github.com/cornell-pl/nerode-public](https://github.com/cornell-pl/nerode-public).

Tested platforms

There are no special system requirements beyond those required to run Docker. The uncompressed Docker image is about 3.36 GiB. The artifact was tested using Docker version 20.10.21. The other relevant dependencies are contained in the image. The dependencies for the source itself are maintained current in the `opam` files for each library in the public GitHub repository.

License

Both `nerode` and `nerode-learn` are available under the Apache v2.0 license.

MD5 sum of the artifact

4365265d0d7390aa915d8ace84cdd1cc

Size of the artifact

1.47 GiB
References

