INFO

This archive is a collection of the scripts and libraries that generate the experiments and data used in the following paper:


The data and code are archived for the purposes of documenting the reproduction of the work as described in this paper:


LICENSES

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FILES

collections.tar.bz2 - (DOI:10.1108/23335) Contains the raw source code for all the necessary experimental collections in the data repository for the work. For more information on the structure including supporting software tools, see:


rawdata.tar.bz2 - (DOI:10.1108/23336) Contains the raw data collections used for the root of all computations in the original and reproduction paper.

cudamaxent.r231.tar.bz2 - (DOI:10.1108/23339) Contains the CUDA MaxEnt code documented as being used in the original 2010 paper. For further details, see:


1Cite as:
cudamaxent.r284.tar.bz2 - (DOI:10.8446/23340) Contains the most recent CUDA MaxEnt code used as the basis of the reproduction of results in the 2020 paper.

cudamaxent.r284.diff - (DOI:10.8446/23342) Contains the changes to the CUDA MaxEnt source code above for the reproduction of results in the 2020 paper.

cudamaxent.update.tar.bz2 - (DOI:10.8446/23341) Contains the updated CUDA MaxEnt code used for the reproduction of results in the 2020 paper.

vidi.r20.tar.bz2 - (DOI:10.8446/23338) Contains the VIDI parser and utility code documented as being used in the original paper; also used in the reproduction. Note that the code has been updated with bug fixes since the original publication.

tools.r19.tar.bz2 - (DOI:10.8446/23337) Contains general MATLAB tools documented as being used in the original paper; also used in the reproduction. Note that the code has been updated with bug fixes (particularly lbfgs.m) since the original publication.

pyrTools.tar.bz2 - (DOI:10.8446/23343) Contains the Wed Mar 28 2001 version of Eero Simoncelli's MatlabPyramid toolbox used in the original paper and the reproduction. Note that much newer versions have been made available (though they are very similar), released under the MIT License.

DEPENDENCIES

In addition to the standard build tools (e.g., Make, gcc) available on a Linux distribution (e.g., Ubuntu 18.04 LTS), the following software is required:

• MATLAB (e.g., R2018a), and its Image Processing, Statistics and Machine Learning), Optimization, and Parallel Computing Toolboxes.

• CUDA (e.g. 10.1)

• Java (e.g. 1.8) and ant

INSTALL

To install the software, the various packages need to be unpacked to the appropriate places.

1. Create a root for the data repository, set an environment variable, and create the expected location for the library code

   mkdir /data # Or a location of your choice
   export DATA_REPOSITORY=/data
   mkdir -p $DATA_REPOSITORY/svn/vision

2. Acquire and install the associated data repository skeleton and tools from the archive at http://hdl.handle.net/11084/10024 (associated with DOI:10.8446/10001)

   tar xf grinnell_10001_5.tar -C $DATA_REPOSITORY

3. Unpack the various packages from this archive

   tar xjf collections.tar.bz2 -C $DATA_REPOSITORY
   tar xjf rawdata.tar.bz2 -C $DATA_REPOSITORY
   tar xjf tools.r19.tar.bz2 -C $DATA_REPOSITORY/svn/vision
   tar xjf vidi.r20.tar.bz2 -C $DATA_REPOSITORY/svn/vision
   tar xjf cudamaxent.update.tar.bz2 -C $DATA_REPOSITORY/svn/vision
   cp $DATA_REPOSITORY/svn/vision/tools/matlab/toolbox/recognition/@maxent/trunk/partrainc.m \ $DATA_REPOSITORY/svn/vision/tools/matlab/toolbox/recognition/@maxent/
   tar xjf pyrTools.tar.bz2 mv pyr-Tools $DATA_REPOSITORY/svn/vision/tools/matlab/toolbox/pyramid
BUILD

Although most of the code is MATLAB, and therefore scripts that do not need compilation, a few key pieces of software must be built.

1. Build the Java parsers for VIDI
   ```
   cd $DATA_REPOSITORY/svn/vision/vidi/java
   ant
   ```

2. Build the MEX files for VIDI and matlabPyrTools
   ```
   cd $DATA_REPOSITORY/svn/vision/tools/matlab/toolbox/images/mex
   MATLAB_ROOT/bin/mex boxfilter.c
   cd $DATA_REPOSITORY/svn/vision/tools/matlab/toolbox/pyramid
   make # The Makefile may need adjustment to your platform
   ```

3. Build CUDA MaxEnt
   ```
   cd $DATA_REPOSITORY/svn/vision/cudamaxent
   make cuda_value.mexa64 # Makefile may need adjustment to your platform
   ```

RUN

The collections may be run in a breadth-first traversal of their dependency graph—see Figure 1 in Weinman (2020). To run a collection, enter the directory and invoke "make" (no targets should be given).

   Each collection may need some local customization to the platform. In particular, the `pathdef.m` would more easily be replaced with an edit to `startup.m` that adds the MATLAB tools directories, i.e.,

   ```
   addpath(genpath(fullfile(getenv('DATA_REPOSITORY'),'svn/vision/tools')));
   ```

KEY

The following key maps the coded experimental collections listed in the paper (Weinman, 2020) to the actual paths in `collections.tar.bz2`