Animator – programmers documentation

In this document functions, important variables of animator are described and basic overview of the algorithm used is given.

Overview

First we load config, then we load options using getopts. After all options are loaded and checked for validity, input files are checked for overlap and merged in temporary folder. Using supplied modulo or the default dataset of points to be intersected by the line is created.

Using gnuplot frames for the animation are generated and given to ffmpeg to create final mp4 file from. Description of functions and significant variables is available in this document.

Functions are called in following order when script is executed for more info check source code:

1. preq
2. validate_params
3. format_regex
4. process_arg
5. test_arg
6. check_overlap
7. merge_input
8. video

I also strongly suggest seeing test.sh test script, which shows most of the scripts functionality.

Functions and scripts

- ## verbose

This function is used to check verbosity level and print its arguments if its at least 1.

- ## vverbose

This function is used to check verbosity level and print its arguments if its greater than 1.

- ## err

Err function is used to exit the program with nonzero exit code and print its argument before doing that. Trap is setup to remove temporary files, you dont have to worry about that.

- ## test_arg

Function testing expecting its argument to be a filepath, its tests if the argument is not empty, is a file, is readable and file is not empty. After that it uses the the perl scripts specified below to check if the dates in file are valid with respect to variable TIMEFORMAT and after that also performs a check which validates that lines are well ordered.

- ## format_regex

Function constructs a regex for basic format check of the timestamp, it can pass invalid dates as 33/10/2017, but the second check using perl script is taking care of those cases.

- ## validate_params

Validates parametres loaded via getopts, it uses simple regular expressions to do that.

- ## parse_eparams

Parses and validates options separated by : from parameter –e and saves them to DOTS and/or TYPE.

- ## preq

Performs check of perquisites needed by the script.

- ## max_folder

As desired behavior is to increment folder suffix if the folder for output already exists, this function performs scan of the target directory for folder with the same name and sets NAME to its previous value suffixed with the incremented integer.

- ## max_file

Is used when creating temporary files, with prefix from variable TMPFILE and is very similar to max_folder, its an alternative to using mktemp as we prefer the behavior which is predictable for debugging.

- ## process_arg

Using first and last line of the argument which is well ordered creates temporary file unsorted which is to be sorted and used for merging the inputs aswell as checking for overlaps in inputs.

- load_config

This function checks if config is not empty, is a file, is readable and data file is not empty, after that it checks if all directives used are valid using variable directives_regex than creates a file config which is ready to be sourced and is sourced.

- video

Most important and longest function, creates file with dots to be intersected which is used as second datasource. Checks if the length of the file is not too small for chosen modulo. Sets y range based on specified options, creates frames using gnuplot. After calculating desired fps based on specified options it runs ffmpeg which creates animation from them

- check_overlap

Using conversion to epoch time, checks if the input files overlap, if they do error is produced.

- merge_input

Using conversion to epoch time sorts the input files and merges them in temp folder.

- dates.pl

Converts a single date to epoch and exits with nonzero code if conversion fails, format and date to be converted are specified as arguments. If you desire other than Europe/Prague timezone to be used edit this script.

- datestd.pl

Is used to convert all dates on stdin to epoch and exits with nonzero code if conversion fails, format is specified as argument. If you desire other than Europe/Prague timezone to be used edit this script.

Variables

- ECODE
  Errorcode to be returned
- VERBOSE

Verbosity level

- ## OUTPUT
  Output file name.
- ## DOTS
  Modulo used for the effect.
- ## TYPE
  Type of the dots used for effect.
- ## TIMEFORMAT
  Timeformat string used for conversion.
- ## TIME
  Desired duration of the animation.
- ## YMIN
  Minimal y value to be shown.
- ## YMAX
  Maximal y value to be shown.
- ## NAME
  Name of the folder to store the result in.
- ## FORMATREGEX
  After constructing it regex to check the dates with is present in this variable.
- ## TMP
  Name of the folder for temporary files.
- ## OPTSTRING
  Variable containing string with options to be supplied to getopts.
- ## FPS
  Fps either the default value or the value calculated based on time.

Notes

Temporary folder where frames and others are stored is created via `mktemp -d`.

Trap is setup on exit which removes the temporary folder, only animation is stored after the script ends.

As config has lower priority than options, getopts has to be run twice once to check if config came and second time to overwrite values loaded from config with options. And once before that to ensure verbosity is applied even during config loading.

TODO

All open issues are available at:

https://gitlab.fit.cvut.cz/nankaond/BIPS2

Merge requests are welcome!