Indra and Vali

Indra is a cross-platform, Python-based program to create synthetic weather time series from a weather record of at least one year. Vali is the child of Indra created for use with ESP-r on 31 May 2018 (*v2.78_esru*). See the *wiki* if you want to find out more about **indra**. It contains a step-by-step guide to installing and running mighty **indra**. If you know your way around, go directly to the sample commands below.
Indra is NOT a weather forecasting tool. It is designed to be used to create variations on weather patterns learned from a source file.
You can call **indra** using the python and shell scripts called vali.py and vali.sh respectively (they are the same script, just written in the two different languages).

Bibliography

The program is based on the algorithms published in Rastogi (2016), Rastogi and Andersen (2015, 2016).

- Full wiki for Indra: https://github.com/paragrastogi/SyntheticWeather/wiki
- Rastogi, Parag. 2016. On the Sensitivity of Buildings to Climate: The Interaction of Weather and Building Envelopes in Determining Future Building Energy Consumption. PhD, Lausanne, Switzerland: Ecole polytechnique federale de Lausanne. EPFL Infoscience. https://infoscience.epfl.ch/record/220971?ln=en.
- Rastogi, Parag, and Marilyne Andersen. 2015. Embedding Stochasticity in Building Simulation Through Synthetic Weather Files. In Proceedings of BS 2015. Hyderabad, India. http://infoscience.epfl.ch/record/208743.
- Rastogi, Parag, and Marilyne Andersen. 2016. Incorporating Climate Change Predictions in the Analysis of Weather-Based Uncertainty. In Proceedings of SimBuild 2016. Salt Lake City, UT, USA. http://infoscience.epfl.ch/record/208743.

@phdthesis{rastogi_sensitivity_2016, address = {Lausanne, Switzerland}, type = {{PhD}}, title = {On the sensitivity of buildings to climate: the interaction of weather and building envelopes in determining future building energy consumption}, shorttitle = {Sensitivity of {Buildings} to {Climate}}, url = {https://infoscience.epfl.ch/record/220971?ln=en}, language = {EN}, school = {Ecole polytechnique federale de Lausanne}, author = {Rastogi, Parag}, month = aug, year = {2016}, note = {doi:10.5075/epfl-thesis-6881} }

License, implementation, and compatibility

This tool is distributed under the GNU General Public License v3 (GPLv3). Please read what this means here. These scripts come with absolutely no warranties/guarantees of any kind. Happy creating fake weather!

Sample Commands

If you type python indra.py –help into the command line, you will see how to use the commands. Some sample customisations are given below:

Change ARMA parameters and bounds

Windows

```
python indra.py --train 1 --station_code gen --n_samples 10 --path_file_in gen\gen_iwec
```

Unix

```
python indra.py --train 1 --station_code 'gen' --n_samples 10 --path_file_in 'gen/gen_iw
```

Change number of samples requested

Windows

```
python indra.py --train 1 --station_code gen --n_samples 100 --path_file_in gen\gen_iwec
```

Unix

```
python indra.py --train 1 --station_code 'gen' --n_samples 100 --path_file_in 'gen/gen_i
```