Tensorlab+: A code repository for reproducing and replicating tensor-based research and more

Stijn Hendrikx, Martijn Boussé, Nico Vervliet, Michiel Vandecappelle, Robin Kenis, Lieven De Lathauwer

Providing high quality code through a multi-step development process.

1. Initial code: from proof of concepts to first results
2. Optimize and simplify code
3. Testing for correctness
4. Add documentation and comments
5. Review round(s) by peers
6. Final check in build procedure

Development process enforces Code standards

- Good coding practices:
  - Readable/understandable
  - Correct and consistent
  - High performance
- Easy to use:
  - Well documented
  - Readme per publication
  - Includes tutorials and demos
- Reproducible

Codes standards

Tensorlab+ aims for the highest standard in the reproducibility spectrum.

- Publication
  - +Code
  - +Data
  - +Executable scripts
  - +Full replication

Includes all code needed to run experiments and provides links to external code.

Provides required data and links to external data.

Provides runnable scripts for each experiment of the included publications.

Many experiments use random data and thus are inherently replicable. Additionally, all algorithms are easily applicable to other data and tutorials and demos are provided.

Tensors, or multi-way arrays, are the natural representation of higher-order data and allow the use of powerful tools.

The full repository includes the code for 34 publications, consisting of more than 150 numerical experiments.

Example: Face recognition under varying illuminations.

Example: Identify source signals using a nonuniform linear array.

For many more examples and papers, see tensorlabplus.net or scan