A quick overview and guide
Overview

EXA2PRO targets developers who want to evaluate their applications in complex heterogeneous systems and clusters with limited programming effort.

EXA2PRO supports various programming models including: OpenMP, OpenCL, CUDA, StarPU, MPI

- Developers who want to try EXA2PRO on a PC/laptop please use the EXA2PRO docker container: [https://hub.docker.com/r/exa2pro/exa2pro-framework](https://hub.docker.com/r/exa2pro/exa2pro-framework)

- Developers who already applied EXA2PRO in an application and want to deploy it on a large-scale system, please try the EXA2PRO singularity container: [https://cloud.sylabs.io/library/_container/606dc8284ad4aa1fdea0c191](https://cloud.sylabs.io/library/_container/606dc8284ad4aa1fdea0c191)

- The source code of all tools is also available: [https://gitlab.seis.exa2pro.iti.gr/public](https://gitlab.seis.exa2pro.iti.gr/public)
What is the effort to apply EXA2PRO?

The most straightforward way to apply the EXA2PRO to an application is through the EXA2PRO high-level programming interface, which is based on SkePU.

Follow the *Getting Started Guide* or the *User Guide* to see whether the application algorithmic pattern matches one of the EXA2PRO skeletons. After applying the skeleton(s), developers can directly evaluate the application on available backends (CPU, GPU, multi-GPU, MPI clusters, ...).

Experience shows that the development effort depends on (i) the extend by which the application algorithm fits with a skeleton and (ii) how well-isolated is the application kernel that the skeleton will replace.

About 2 weeks of programming were required for the EXA2PRO applications (See Examples and Initial Results on the EXA2PRO website).

Multivariant user functions can be used in cases the skeletons are not a good fit (see *User Guide* section 1.12). Applying StarPU can also be considered, especially for applications that follow the task-based programming model (see the StarPU user guide and best practices).
Guides, examples and tutorials

Plenty of material can be found in the EXA2PRO website

Examples:
- Materials and Processes for CO₂ capture
- Simulation of Supercapacitors
- Brain Modeling

Video Tutorials:
- SkePU
- StarPU

User guides for getting started and best practices: https://exa2pro.eu/#developers
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