The MATEDOR project develops software technologies and standard APIs, along with a sustainable and portable library, for large-scale computations that can be broken down into very small matrix or tensor computations. The main target of MATEDOR is to accelerate applications from important fields that fit this profile, including deep learning, data mining, astrophysics, image and signal processing, hydrodynamics, and more.

**Sustainable and Performance-Portable Software**

MATEDOR is a high-performance numerical library for batched linear algebra subroutines autotuned for modern processor architectures and system designs. The MATEDOR library includes LAPACK-compliant routines that target many small dense problems, tensor, and application-specific operations, e.g., deep-learning. These routines are constructed as much as possible out of calls to batch BLAS routines and their look-alikes required in sparse computation context.

**Applications**

1. **Tensor Contractions in High-order FEM and Applications [1]**

2. **Dense/sparse System Solvers & Preconditioners [3][4]**

3. **Density Matrix Renormalization Group (DMRG++)**

4. **Distributed hierarchical linear solver [6]**

5. **Deep Neural Networks and Data Analytics [1]**

**References**


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