High-performance Matrix Computations

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BLAS

Linear Algebra operations decomposed into simpler operations.

BLAS-1:	$y := \alpha x + y$ $\gamma := \alpha + x^T y$	$x, y \in \mathbb{R}^n$
BLAS-2:	$y := Ax + y$ $y := L^{-1}x$	$A, L \in R^{n \times n},\ x, y \in R^n$
BLAS-3:	$C := AB + C$ $C := L^{-1}B$	$A, B, C, L \in R^{n \times n}$

BLAS	#FLOPS	Mem. refs.	Ratio
Level 1	$2n$	$3n$	$\mathbf{2/3}$
Level 2	$2n^2$	n^2	$\mathbf{2}$
Level 3	$2n^3$	$4n^2$	$\boldsymbol{n/2}$