

Routine	op \ m,n	$2k \times 2k$	$1k \times 8k$	$1k \times 64k$	$100 \times 10k$	$100 \times 100k$	$100 \times 1M$	$100 \times 5M$
dgemm	$u = a*b'$;	0.138	0.169	1.141	0.003	0.034	0.325	1.970
GESVD	$s = \text{svd}(a)$	1.963	1.048	9.643	0.071	1.217	10.828	57.804
	$[u,s,v] = \text{svd}(a)$	55.117						
	$[u,s,v] = \text{svd}(a, 'econ')$	54.167	7.874	26.678	0.184	2.369	22.480	115.516
GESDD	$s = \text{svd}(a)$	2.355	0.934	9.604	0.075	1.125	11.151	56.881
	$[u,s,v] = \text{svd}(a)$	3.734						
	$[u,s,v] = \text{svd}(a, 'econ')$	3.405	1.953	19.947	0.150	2.203	23.259	122.242
GEJSV	$s = \text{svd}(a)$	24.261	4.557	17.575	0.068	2.807	265.637	9169.318
	$[u,s,v] = \text{svd}(a)$	52.662						
	$[u,s,v] = \text{svd}(a, 'econ')$	27.323	5.247	22.513	0.150	3.003	269.388	9195.270

Table 1: GNU Octave + openblas-0.2.19+lapack-3.7.0. CPU=i7-6700HQ

Time cost (seconds) of singular value decomposition to random matrix $\text{rand}(m,n)$.

99.8% of the time is spend in "idamax_k_HASWELL" of "libopenblas-r0.2.19.so" for JSV of size $100 \times 5M$ matrix.

Ref: <https://savannah.gnu.org/bugs/index.php?55727>