General purpose GPU has limited utility compared to traditional multi-core CPU computing in diffuse optical tomography

# Installing CULA (txt|pdf) -for using mex files

Matlab Executables:

JTJ Routine (Update Equation 3): calc\_update\_gpu\_JTJ.mexa64

JJT Routine (Update Equation 4): calc\_update\_gpu\_JJT.mexa64

# Installing ViennaCL (txt|pdf) -for using mex files

Matlab Executable:

Sparse Finite Element Solver: viennacl\_bicgstab\_precon.mexa64

# Creation of MEX files using CULA functions (txt|pdf)

Example: Mex wrapper for culasv code: culasv.c

Mex wrapper for ViennaCL code: viennacl\_bicgstab\_precon.cpp

# Matlab Code for Image reconstruction (requires [NIRFAST](http://www.google.com/url?q=http%3A%2F%2Fwww.dartmouth.edu%2F%257Enir%2Fnirfast%2F&sa=D&sntz=1&usg=AFQjCNGy0Qj1Ase3wF2EPCnMRDNOteJ80A))

On GPU:

Jacobian computation: get\_field\_GPU\_inv.m

Reconstruction computation: reconstruction\_stnd\_GPU\_inv.m

Note: These instructions are for linux operating system only.

This Matlab code is used as part of the work presented in:

J. Prakash, V. Desai, S. Srinivasan, and P. K. Yalavarthy, "Multi-core computers have high scalability than graphics processing units for diffuse optical tomographic image reconstruction," SPIE/OSA European Conference on Biomedical Optics (ECBO-2013), May 12-16, 2013, Munich, Germany

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