

NemoMath - Enhancement #706

Improve Memory Layout and Allocation of MathVector

11/09/2011 03:30 PM - M. Rolf

Status:	Resolved	Start date:	11/09/2011
Priority:	Normal	Due date:	
Assignee:	M. Rolf	% Done:	100%
Category:		Estimated time:	0.00 hour
Target version:	NemoMath 0.4		

Description

Explore memory layout without several layers of pointers, but store everything (refCount,size,data) in one memory block. Compare std::string implementation.

Possible benefits (?):

- Faster allocation/deallocation
- Faster dereferencing
- Smaller memory footprint (in particular for small vectors)
- Maybe better caching behavior (memory that's used together belongs together!)

Drawbacks:

very ugly!

History

#1 - 06/21/2012 03:40 PM - M. Rolf

- Status changed from New to In Progress

- % Done changed from 0 to 40

#2 - 06/21/2012 03:44 PM - M. Rolf

Benchmark results for first implementation:

Benchsuite [MathVectorCreate]

Performing each case 10000000 times with operation-size 10

Benchcase [MathVectorCreate:Create]

Operations per second: 9.71064e+06

Benchcase [MathVectorCreate:CreateCopyModify]

Operations per second: 4.81884e+06

Compared to previous implementation:

Benchsuite [MathVectorCreate]

Performing each case 10000000 times with operation-size 10

Benchcase [MathVectorCreate:Create]

Operations per second: 5.36829e+06

Benchcase [MathVectorCreate:CreateCopyModify]

Operations per second: 2.64776e+06

Compared to Eigen2:

Benchsuite [MathVectorCreate]

Performing each case 10000000 times with operation-size 10

Benchcase [MathVectorCreate:Create:Eigen]

Operations per second: 9.52886e+06

Benchcase [MathVectorCreate:CreateCopyModify:Eigen]

Operations per second: 3.77345e+06

#3 - 06/27/2012 03:13 PM - M. Rolf

- % Done changed from 40 to 60

#4 - 10/02/2012 04:40 PM - M. Rolf

- % Done changed from 60 to 80

#5 - 01/15/2013 05:15 PM - M. Rolf

- Status changed from In Progress to Resolved

- % Done changed from 80 to 100