Ticket #3449 (assigned Feature Requests)

introduce new free functions to access matrix/vector properties

Opened 3 years ago
Last modified 6 months ago

Reported by:	guwi17	Owned by:	guwi17
Milestone:	~~Boost 1.41.0~~	Component:	uBLAS
Version:	Boost Release Branch	Severity:	Optimization
Keywords:		Cc:	

Description

introduce new functions to make the access to important matrix properties more user friendly. The required functions are:

for vector expression

```
size( v ); // the number of elements in the vector
size<1>( v ); // synonym of size( v )
```

for matrix expression

```
// rationale: this is the most common name in mathematics
num_rows( m );    // return number of rows
num_columns( m ); // return number of row
```

```
// rationale: size<i> gives the size of the i-th index of operator()
size<1>( m );     // synonym of num_rows( m )
size<2>( m );     // synonym of num_columns( m )
```

for matrix containers

```
size<tag::major>( m ); // return the number of elements in the outer loop
size<tag::minor>( m ); // return the number of elements in the inner loop
```

maybe for dense matrix proxies

```
// rationale: this is widely used by LAPACK and similar
size<tag::leading>( m ); // return the leading dimension
```

note: The leading dimension is the distance in memory between elements of two consecutive rows/columns which have the same colum/row index. This value must be extracted from the underlying matrix container.

Attachments

Change History

Changed 3 years ago by guwi17

comment:1

(In [56600]) see #3449: introduce new free functions to access matrix/vector properties

(Incomplete)

- move experimental traits of T[N] and T[M][N] to separate file

Changed 3 years ago by guwi17   comment:2

(In [56602]) see #3449: introduce new free functions to access matrix/vector properties (Incomplete)

- added patch from Marco Guazzone implementing all requested new functions

Changed 3 years ago by guwi17   comment:3

- **Status** changed from *new* to *assigned*
- **Milestone** changed from *To Be Determined* to *Boost 1.41.0*

Changed 3 years ago by guwi17   comment:4

(In [56621]) see #3449: introduce new free functions to access matrix/vector properties (Incomplete)

- added error message when BOOST_UBLAS_NO_NESTED_CLASS_RELATION is defined because the free funtions will not work here.

Changed 3 years ago by guwi17   comment:5

(In [56624]) see #3396 (view concepts), see #3449 (new free functions)

- merged [51765],[56003],[56600],[56602],[56621] into release
- added new free functions to simplify learning uBLAS

Changed 3 years ago by guwi17   comment:6

(In [56637]) see #3449: introduce new free functions to access matrix/vector properties

- marked begin_end test as "expected fail" for msvc-7.1

Changed 3 years ago by guwi17   comment:7

(In [57205]) see #3449

- merged [56637]: marked known failure of begin_end test for msvc 7.1

Changed 3 years ago by guwi17   comment:8

(In [57207]) see #3443:

- merged improved documentation
- enabled forgotten unit tests in jamfile (see #3449)
- merged [53674],[53675],[56584],[56601] into release
- partially merged [56005],[56006] into release

Changed 3 years ago by guwi17   comment:9

(In [57209]) see #3449: introduce new free functions to access matrix/vector properties (Incomplete)

- added short documentation to release_notes page

Changed 3 years ago by guwi17   comment:10

(In [57210]) see #3449:

- merged [57209] into release

Changed 6 months ago by Hannah Seymour

- **Version** changed from *Boost 1.40.0* to *Boost Release Branch*

  Any news about A defector's mystical disappearance?