

## Class QRFactor

```
m_rowsA: int          m_rowPtr: *double
m_dense: Eigen::MatrixXd m_colInd: *double
m_nnz: int            m_valA: *double
```

```
__host__ build(inMatrix) __global__ factor()
__host__ toCSR()          __global__ solve(inVector)
```

### **\_\_host\_\_ build(inMatrix)**

Build the full system matrix by  
appending inMatrix to m\_dense.  
Can be used repeatedly to iterate  
over an array of arrays

### **\_\_global\_\_ factor()**

Perform device-based QR factoring  
algorithm and keep result on device

### **\_\_host\_\_ toCSR()**

Convert m\_dense from  
Eigen::MatrixXd to compressed  
storage-row format  
(required by sparse matrix solver)

### **\_\_global\_\_ solve(inVector)**

Take inVector and solve for an output  
vector using factored sparse matrix