
Subject: Math - GaussJordan function

Posted by [frederik.dumarey](#) on Sat, 29 Oct 2022 18:55:33 GMT

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Hey all,

I recently needed a Matrix elimination technique in order to solve some linear equations. Gauss-Jordan is a really quick algorithm for this purpose, and the fact that I wanted a function that accepts 2D arrays by reference needed some special handling using a template

For those of you that are interested in the algorithm, or want to see how I solved the multi dimensional by ref function header:

```
template <typename TwoDArray>
void GaussJordan(const int& n, TwoDArray& a)
{
    for (int i=0; i<n; i++)
    {
        if(a[i][i] == 0.0)
        {
            cout << "Error, zero pivot values found!";
            exit(1);
        }

        for (int j=0; j<n; j++)
        {
            if (i!=j)
            {
                double ratio = a[j][i]/a[i][i];
                for (int k=0; k<n+1; k++)
                {
                    a[j][k] = a[j][k] - ratio * a[i][k];
                }
            }
        }
    }

    for (int i=0; i<n; i++)
    {
        a[i][n] /= a[i][i];
        a[i][i] = 1.0;
    }
}
```

Have coding fun!
Frederik.

File Attachments

1) [MathGaussJordan.cpp](#), downloaded 253 times
