Which java-library computes the cumulative standard normal distribution function?

Asked 15 years, 11 months ago   Modified 4 years, 6 months ago

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11

For a project I have a specification with formulas, I have to implement. In these formulas a cumulative standard normal distribution function exists, that takes a float and outputs a probability. The function is symbolized by a Φ. Exists a Java-library, that computes this function?

`java`   `statistics`   `probability`   `computation`

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edited Jan 14, 2009 at 13:11

asked Jan 14, 2009 at 12:24

Mnementh
51.3k ● 48 ● 151 ● 202

5 Answers

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Apache Commons - Math has what you are looking for.

More specifically, check out the `NormalDistribution` class.

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If you want the exact code, this one seems to be the same function used in OpenOffice Calc (I've made some changes for it to work in java):

```java
// returns the cumulative normal distribution function
// for a standard normal: N(0,1)
double CNDF(double x)
{
    int neg = (x < 0d) ? 1 : 0;
    if ( neg == 1)
        x *= -1d;

    double k = (1d / ( 1d + 0.2316419 * x));
    double y = (((( 1.330274429 * k - 1.821255978) * k
                    k - 0.356563782) * k + 0.319381530)
    y = 1.0 - 0.398942280401 * Math.exp(-0.5 * x * x)

    return (1d - neg) * y + neg * (1d - y);
}
```

Found it here:

http://www.codeproject.com/Messages/2622967/Re-NORMSDIST-function.aspx

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the question wants the pdf of normal distribution!
– langerra.com Jun 4, 2013 at 11:30

I don't think so. The question says "cumulative standard normal distribution function" both in the title and the text ... unless Φ means it's supposed to be the probability density function... – Erk Dec 4, 2013 at 10:18 ✎

A co-worker suggested colt, as he used it before. This function has exactly the result as the example in the reference document.

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You could use the power series formula, which only takes up about 10 lines of code... see for example http://introcs.cs.princeton.edu/java/22library/Gaussian.java.html (the function `Phi`)

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SuanShu, [a Java numerical analysis library](#), computes the normal distribution and many other statistical distributions.

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edited May 26, 2020 at 8:21

H Li
15 ● 2

answered Jun 24, 2010 at 16:59

Ryu
21 ● 1