arpack_wrapper

NAME

arpack_wrapper - a frovedis module supports singular value decomposition on sparse data using arpack routines.

SYNOPSIS

import com.nec.frovedis.matrix.ARPACK

Public Member Functions

GesvdResult ARPACK.computeSVD (RowMatrix data, Int k)
GesvdResult ARPACK.computeSVD (FrovedisSparseData data, Int k)

DESCRIPTION

This module provides interface to wrap spark computeSVD method of RowMatrix class using arpack native routines at frovedis server side.

Detailed Description

computeSVD (data, k)

Parameters
data: A spark RowMatrix object or a FrovedisSparseData object
k: An integer value to specify the number of singular values to compute

Purpose
If "data" is a spark RowMatrix object, then internally it first converts the RowMatrix to frovedis sparse data at frovedis server and then computes the singular value decomposition on the sparse data at frovedis side. Once done, it returns a GesvdResult object containing the proxy of the results at frovedis server and releases the server memory for the converted sparse data.

If "data" is already a FrovedisSparseData object, then it directly computes the singular value decomposition at frovedis side and returns the GesvdResult containing proxy of server side results. In that case, the input sparse data needs to be released by the user.

When required, the spark client can convert back the frovedis server side SVD result to spark equivalent result form.

For example,

```
val res = ARPACK.computeSVD(data,2) // compute 2 singular values for the given data
val r2 = res.to_spark_result(sc) // "sc" is the object of SparkContext
```

Return Value
On success, it returns an object of GesvdResult type containing the proxy of SVD results at frovedis server side. If any error occurs, it throws an exception.