

APART FROM SAS VIYA, ARE THERE WAYS TO RUN OPEN SOURCE ALGORITHMS (R, JAVA, ETC) FROM SAS ?

Java is well integrated in Base SAS via the Data Step Component Interface (DSCI) for Java Objects. This interface was presented in the OASUS Fall 2015 QandA and allows you to leverage algorithms implemented in Java. In the Fall 2015 QandA, the Java BigNum algorithm was integrated into SAS via DSCI.

R is another big player in the open-source world and is gaining a lot of traction for advanced analytics. SAS has recognized the importance of R by providing seamless integration with R via PROC IML and IML Studio with IMLPlus language (we will focus here only on PROC IML). IML has been selected for this integration because, as is the case for R, it is a matrix-centric language; hence R is seen to be a natural complement to IML.

The mechanism to invoke R programs from IML is the SUBMIT block with the /R option. In order to get R "connected" to sas, you have to:

- 1) Install a version of R compatible with the version of SAS that you are running. Both SAS and IML must be installed on the same computer.
- 2) Set the RLANG option in the SAS configuration file to enable the SAS to R interface.

Running R is pretty simple; any code in the SUBMIT block will be treated as R code and will be passed directly to R. However, it is important for this interface to be useful to allow SAS and R easily interchange, either via matrices or datasets. To do so, SAS provides the following routines:

- 1)ExportDataSetToR
- 2)ExportMatrixToR
- 3)ImportDataSetFromR
- 4)ImportMatrixFromR

In the SUBMIT statement, it is possible to pass parameters as IML matrices whose values are substituted into the language statements in the SUBMIT block. To reference a parameter in the SUBMIT block, you prefix the name of the parameter with an ampersand (&).

You can leverage R graphics from SAS, however care must be taken to handle the resulting graphs. By default, R will render the graph in its own environment which is not directly accessible from SAS. To render the graph in SAS, you must route it to a file (in png, jpeg or other similar formats) and use ODS to display the file in a HTML document (using regular ODS statement or the ODS Report Writing Interface).

If you intend to re-use a R program on a regular basis, you can embed it in a user-defined IML routine, making the integration with R even more seamless.

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