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HOW TO INSTALL AND IMPLEMENT THE 3D CONTINUOUS SPACE PROJECTION TO REPAST

The 3D projection gives Repast HPC the ability to simulate agents in three dimensional Cartesian space and it manages all MPI operations for parallel computing. The user is re required to install Repast HPC and all its components. The tutorial and details on Repast HPC can be found on its main website at: http://repast.sourceforge.net/hpc_tutorial/TOC.html.

How to Install Repast HPC 3D Space

1. Go to http://engr.uconn.edu/~gelyko/md-repast-3d.html and download the 3D projection.

2. Add the header files, and the source files or the library files accordingly to the path in your makefile for compilation and linking.

3. To convert the usage of 2D space to 3D space, change all instances of
    #include "SharedContinuousSpace.h"   to   #include *"SharedContinuousSpace3D.h"*.

4. Then replace all instances of
    "repast::SharedContinuousSpace<...>"   with "mdr::SharedContinuousSpace3D<...>".

How to Run the Provided Repast HPC 3D Continuous Space Demo

A demo of the 3D continuous space showing a 3D simulation of moving particles is provided at http://engr.uconn.edu/~gelyko/md-repast-3d.html

Instructions for the demo:

1. Download and extract the demo file from the site above.

2. Modify the paths in the Makefile to specify the location of Repast HPC and the 3D projection. For example:

   # Specify path for Repast HPC

   BASE_DIR=../lib/RHPC_2.0

   # Specify path for the mdr 3D projection

   MDR_3D_DIR=mdr-3d-projection/

3. Use the provided command "make c" to clear all the object files and the executable file if necessary before recompilations.

4. Recompile the files by typing "make" to generate the executable file.

5. Confirm that the boost mpi has been added to the path and then run the program by typing "mpirun -n 8 ./bin/demo_3D.exe props/config.props props/model.props".

Users can visualize the result of the program using the configuration viewer AtomEye, which can be downloaded from http://li.mit.edu/Archive/Graphics/A/