

Programming Resources

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Python

We plan to use Python for this course, since it is now possible to use Python for simulating both continuous systems and discrete event systems. You will need packages to support the following functionality:

- graphics and visualization (e.g., Pygame, Pyglut);
- plotting (e.g., Matplotlib);
- numerics, ode solvers (e.g., Numpy and Scipy); and
- discrete event modeling (e.g., SimPy) (*in situations where using SimPy becomes onerous, we will use Arena DES simulator*).

Using Python will allow you to scale-up your simulations. It is also a lot of fun. Python is increasingly becoming the language of choice for scientific computing, and I think that you are better served by achieving proficiency in Python.

Open Source Physics

In the past we have used OSP package for developing continuous systems simulations. OSP is written in Java and includes (simple) visualization, plotting, numerical routines for solving ordinary differential equations, graphical user interface support, etc.

You may choose to use OSP; however, you may find that you will need older versions of JDK to successfully compile and use OSP.

Instructions

Download the osp_core_ode_csm.zip file from the course platform. This archive contains OSP core, ODE and CSM packages.

You will also need Java Development Kit (JDK) to use OSP. JDK is available from Oracle website.

osp_doc.zip file available on the course platform includes OSP documentation.

Arena DES Installation

We will use Arena Simulation Software by Rockwell Automation to model Discrete Event Systems. We have access to Arena v.10 on the course platform. This is an old version; however, it is sufficient for the purposes of this course. Arena v.10 can be installed on Windows 10 using compatibility mode (recommended setting).

Instructions

Download Arena.zip file, unzip it and click on Setup.exe file to install the software. On Windows 10, you will have to install this software using compatibility mode.