Autodesk Synthesis | README

## What is Synthesis?

Synthesis is our FRC Game Simulator in which we integrate 3D CAD model data and robot code into a physics simulation engine in order to test robot functionality and increase driver experience. We can achieve this by synthesizing the design and programming aspects that go into creating a robot for the competition season. The simulator is built in the Unity Game Engine and robot data is generated from your Autodesk Inventor robot CAD model. The robot can be controlled using your robot code and the FRC Driver Station or, as an alternative, arrow keys for testing basic robot functionality. Please like BXD: Synthesis on Facebook to receive updates on the BXD activities and Synthesis progress: <https://www.facebook.com/BuiltXDesignBXD>.

## Where to Download?

You can download the most updated version of Synthesis from the following link to the BXD: Synthesis website: <http://bxd.autodesk.com/synthesis/?page=Downloads>

## Installation Instructions:

1. Download the installer by following the link mentioned above
   1. Note: You will need admin rights to download the simulator properly.
2. Follow the steps shown in the installer.
3. Follow our tutorials on how to export robots, fields, or jump straight into the simulation environment. The tutorial page can be found on the installer or on the BXD: Synthesis website tutorial page: <http://bxd.autodesk.com/synthesis/?page=Tutorials>

## Compatibility:

In order to run our simulator you must have the following items on your local machine:

* Windows 7, 8, or 10
* Net Full Package (Comes with installer)

To upload your code onto your CAD in the simulator, you must use either JAVA or C++ code from 2015 with the RoboRio on the IDE Eclipse. If you wish to use code from 2013 or 2014, you must use C++ code in the IDE Visual Studio 2012. More information is included in the tutorials on the BXD: Synthesis website.

Java: <http://bxd.autodesk.com/synthesis/?page=tutorialCompileJava> C++: <http://bxd.autodesk.com/synthesis/?page=tutorialCompileCPP>

## How to Submit Code in Open Source:

Our project is open-source! Shortly after the release of the product in November, 2015 we will add all of our current code directories onto public Github. We hope this will create a more open environment to which the entire FIRST community can share and contribute. If you would like to view and access the code, you can view our Github home page which is filled with wiki pages regarding each of the different applications. Links to the Github pages can be found at the footer of the website: <http://bxd.autodesk.com/synthesis/> and links to the Github Wiki pages can be found on the tutorial page: <http://bxd.autodesk.com/synthesis/?page=Tutorials>

It will have the feature of being able to pull code from our master branch that will be updated on a build basis. In order to push your code to a newer version of the repositories to be released, you will need to have conformation from one of our dedicated admins for that specific branch of Synthesis.

Please submit code and specific code-related information to the Github. If you create something fantastic or fix something and you wish to submit to the master branch of the repository, you will need approval from that specific branch’s admin. This will involve a code review by professionals and potential code modifications to fit the Autodesk standard. Also, if you write any code to add to the master branch, you are expected to write a brief summary of your code at the top, provide detailed comments as to improve the product for the community, and signed a release agreement to Autodesk inc. Additional tutorials and information is soon to come on the BXD: Synthesis tutorial webpage: <http://bxd.autodesk.com/synthesis/?page=Tutorials>.

## Synthesis Forums/ Idea Station

## In order to find our most up-to-date information and what we are actively working on, you may have to venture onto the Autodesk Synthesis Forums page. Please submit ideas and questions about the product here: regarding how to use Synthesis and how to make Synthesis better. To find more information regarding Synthesis and its progress, you can read our blog located on the forums that have new technical entries. The blog is written by our developers and describes how we developed certain aspects of the simulator and sharing our experiences at Autodesk and also includes information on the upcoming builds and any patch notes that we will be releasing in the future. You can find the forums if you follow this link: <http://forums.autodesk.com/t5/bxd-synthesis/ct-p/97>.

Additionally, if you wish to express an idea for an addition to our simulator or to fix a problem, you can do this via the Autodesk Synthesis IdeaStation. This site is actively monitored by our Synthesis team as we work to incorporate your ideas into creating something that will truly benefit the project. Here is a link to our IdeaStation: <http://forums.autodesk.com/t5/bxd-synthesis-ideastation/idb-p/104>

## Contact Us

Please post all of your questions, comments, and ideas on the Synthesis forum and idea station found on the Synthesis website. If you wish to contact us directly to report a problem, request assistance, etc., you may send an email to [BXD@autodesk.com](mailto:BXD@autodesk.com).

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