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Data-Centric Machine Learning for Autonomous Driving

PreSIL: Installation guide

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This installation guide is intended to help students or professionals who have no experience with the PreSIL tool and want to use it.

PreSIL is a plugin for GTAV that transforms it into a vision-based self-driving car research environment.

1. First you need to install GTA V, it is possible to install any type of version, there's no problem discovered so far. However, it is recommended not to use the Epic Games Engine, as there were possibilities that this Engine would not work correctly with the tool

2. Download and install opencv (https://opencv.org/releases/). You can download any version there was no problems in terms of opencv version. Place \"opencvinstallationdirectory"\build\x64\vc15\bin\opencv_world_"version".dll in the GTAV installation directory.

3. Download Eigen (http://eigen.tuxfamily.org/index.php?title=Main_Page) and create an environment variable (EIGEN_DIR) pointing to its directory.

4. To Create an environment variable on windows, write "environment variable" on Windows Search bar and create a new one (EIGEN_DIR) pointing to its directory, don't forget to create in system space instead of user space.

5. Access the PreSIL github : https://github.com/bradenhurl/DeepGTAV-PreSIL download repository to own disk.

6. On these folders it is necessary to copy or move contents of bin/Release files into GTA installation directory.

7. *After that, it is necessary to Replace your saved game data in Documents/Rockstar Games/GTA V/Profiles/ with the contents of bin/SaveGame in the downloaded directory.*

8. Download path.xml from our repository and store it on GTA installation Directory. The older one was Blocked and our path.xml can be used.

9. Obtain the VisionNative-Depth Extractor repo (https://github.com/bradenhurl/GTAVisionExport-DepthExtractor). Follow instructions to build the native repository.

10. Create an environment variable (GTAVisionLib) pointing to the build path of GTAVisionNative.lib (from the previous step).

11. Create an environment variable (GTAV_INSTALL_DIR) pointing to the GTAV installation directory.

12. Create an environment variable (DEEPGTAV_DIR) pointing to the directory of this repository.

13. Create an environment variable (DEEPGTAV_LOG_FILE) pointing to the file for logging (debugging purposes).

14. Create an environment variable (DEEPGTAV_EXPORT_DIR) pointing to the export location.

If you want to generate DeepGTA solution u should Open visual studio 2017 or 2019, if you don't have it, download it.

If you try to compile the code, you will be able to verify that there are several compilation errors. This is due to the fact that it is necessary to change some of the exports and additional directories.

1. First you need to install the c++ boost library.
2. Then go to project properties -> configuration properties-> C/C++-> General -> Additional include directories -> and add the path to the boost library directory and also the opencv\build\include directory.
3. Leave the c/c++ separator and go to the linker and check if in the additional dependencies is opencv_world"yourversion".dll. If not, change to the version of opencv you downloaded and is on this directory \"opencvinstallationdirectory"\build\x64\vc15\bin\opencv_world_"version".dll

Now is already possible to compile the solution and use the tool, however there is a problem that whenever it runs with the game, the game will crash and will not give information about what they are, only error id=35 or id=36 will appear.

To solve these problems, it's necessary to change some default variables in the code "DRIVE_SPEC_AREA" to false and "START_SPEC_AREA" to false located in the file Constants.h

The vehicle_labels.csv must be changed for our labels as there were some problems with the previous ones and ours were fixed.

Now it is possible to compile the code. Open GTA V in story mode, you must use our veldrive configuration, as it is optimized. Access the windows command line in the directory where our file is and type in the terminal "python3 veldrive" with the game open in windowed mode 1920x1080 and the process will begin. The veldrive is configured to only run for a maximum of 8h. It's possible to stop it by closing the game.

Recommendations:

1. Under your game settings, set your screen to windowed mode 1920x1080
2. Don't run veldrive script when character is inside building, that may cause few problems.
3. Bypass the menu screen by configuring GTAV to start directly into Story Mode
4. To avoid the Rockstar updates, start the game using GTA5.exe, otherwise use GTAVLauncher.exe or PlayGTAV.exe.
5. If GTA V updates you can't use PreSIL until a new ScripHook version came out by developers. Normally its around 1 week until new ScripHook update after GTA update.