
STARPLANNER

INSTALLATION GUIDE & MANUAL

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INTRODUCTION

StarPlanner is an Artificial Intelligence System that plays StarCraft: Brood War™ using a technique known as Automated Planning. For more details visit the website <http://pekalicious.com/starplanner>

INSTALLATION

StarPlanner uses a software library named **Brood War API** (BWAPI) that allows it to communicate with StarCraft. The library only runs in the version StarCraft: Brood Wars with patch 1.16.1. Thus, we must install StarCraft and the patches as follows:

1. Install **StarCraft**
2. Install **StarCraft: Brood Wars**
3. Install StarCraft: Brood Wars **patch version 1.16.1**

StarPlanner actually uses BWAPI indirectly, through **BWAPI-JBridge**. JBridge is a “wrapper” library that allows Java applications to use BWAPI (which is originally written in C++). Thus, we must also make sure that a Java runtime environment is installed on the machine.

4. Install Java Runtime Environment¹

BWAPI also has a required software to be installed:

5. Microsoft Visual C++ 2008 Redistributable

The newest executable version of StarPlanner now is packaged into a single installer. All required software such as BWAPI, BWAPI-JBridge and Chaoslauncher, as well as StarPlanner itself, are contained in this single installation file. So, the final step to install StarPlanner is simply to

6. Run the installer

Note that StarPlanner has been tested only in Windows XP 32bit and Windows 7 64bit. Also, if during installation Java was installed, there is a strong chance that a reboot is required. This is because an environment variable named JAVA_HOME is set to the machine which may not be available until a restart.

Now you should be able to see a new start menu folder named StarPlanner.

¹ In case StarPlanner doesn't run after installing everything, try adding a “JAVA_HOME” environment variable that points to java's installation path (usually “C:\Program Files\Java\<java version>”).

MANUAL

StarPlanner has two modes: **Standalone** and **In StarCraft**. In StarCraft mode, the user must start Chaoslauncher, run StarCraft and select a game (any type: scenario, custom, multiplayer, etc.). When the game starts, StarPlanner's configuration window appears where the user can view and configure its behavior. In standalone mode, the user can configure StarPlanner before it is launched, and run StarCraft automatically by simply selecting a map.

INSTARCRRAFT MODE

No matter how you choose to start a StarCraft game (either by running StarPlanner's Main Menu or by manually starting a StarCraft game through Chaoslauncher²) StarPlanner's user interface, JStarPlanner, is initiated.

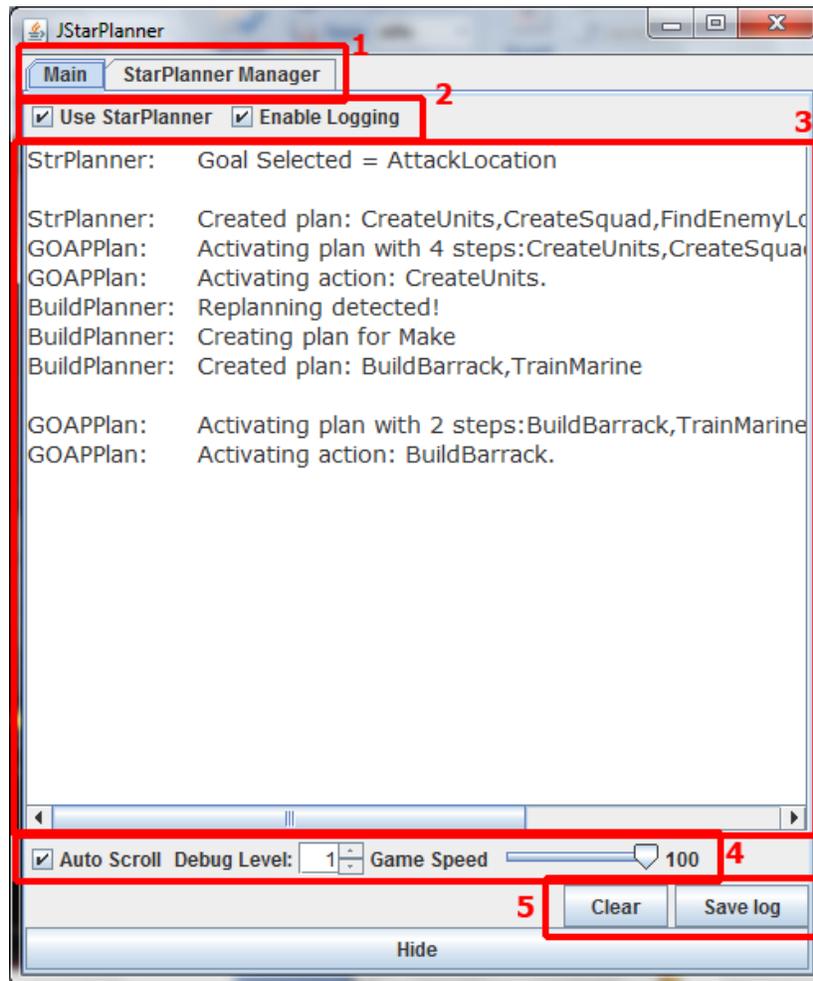


FIGURE 1 JSTARPLANNER

² If you are using Windows Vista or Windows 7, you need to run Chaoslauncher or StarPlanner under administrator privileges (as shown in Standalone Mode).

This window contains two tabs (1): **Main** and **StarPlanner Manager**. In StarPlanner Manager you can configure StarPlanner's behavior. This is usually done before StarCraft is initiated and thus it is explained in the Standalone Mode section.

The main functionality of the Main tab is to display debug information about StarPlanner's activity. The text pane at the center of the tab (3) shows this debug information. You can disable debugging all together by un-checking **Enable Debug** (2). You can also completely disable StarPlanner by un-checking **Use StarPlanner** (2).

Under the center text pane there are three options (4): **Auto Scroll**, **Debug Level** and **Game Speed**. If Auto Scroll is checked, the text pane will automatically scroll at the end of the appended text automatically. This is useful when you want to inspect StarPlanner's debug information at a specific time by un-checking this option.

StarPlanner's debug information comes in various levels of verbosity. The higher the number, the less detailed information is displayed. Thus, at level 0, one can view all details while at level 4 only a selected set of information is displayed.

The Game Speed slider sets the speed of StarCraft's simulation. 0 means the fastest possible speed while 100 means the slowest (this follows BWAPI's speed values which, admittedly, is counter-intuitive).

Finally, at the bottom (5) there are three buttons: **Clear**, **Save Log** and **Hide**. Clear simply clears the debug information from the text pane, Save Log saves the information to a selected text file and Hide simply hides JStarPlanner. To show JStarPlanner again, one can type "show starplanner" while a game is currently active.

STANDALONE MODE

To run StarPlanner in standalone simply execute StarPlanner from the Start Menu. Note: if you are using Vista or 7 you will need to run it as administrator (right click on the shortcut -> Run as Administrator).

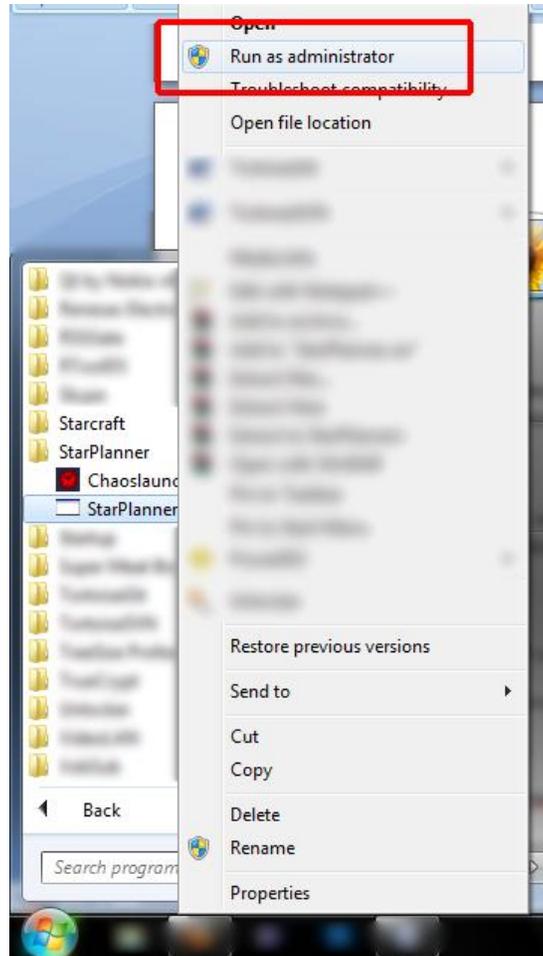


FIGURE 2 RUN STARPLANNER AS ADMINISTRATOR

When executed, StarPlanner's Main Menu is shown.

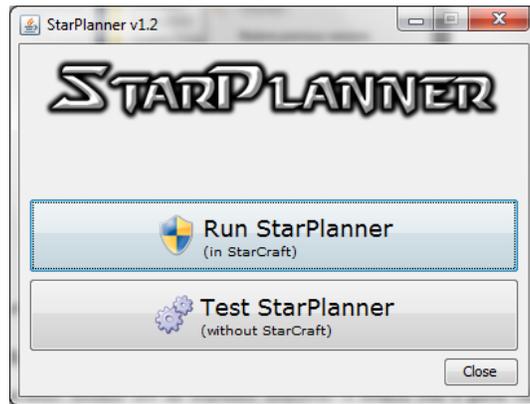


FIGURE 3 STARPLANNER'S MAIN MENU

The Main Menu has three options: **Run StarPlanner (in StarCraft)**, **Test StarPlanner (without StarCraft)** and **Close**. Clicking the first option will display a popup dialog asking for the user to select a map. Once a map is selected, the Main Menu will automatically start StarCraft using Chaoslauncher and select all the appropriate options to start the game.

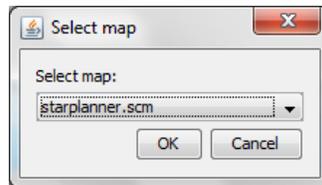
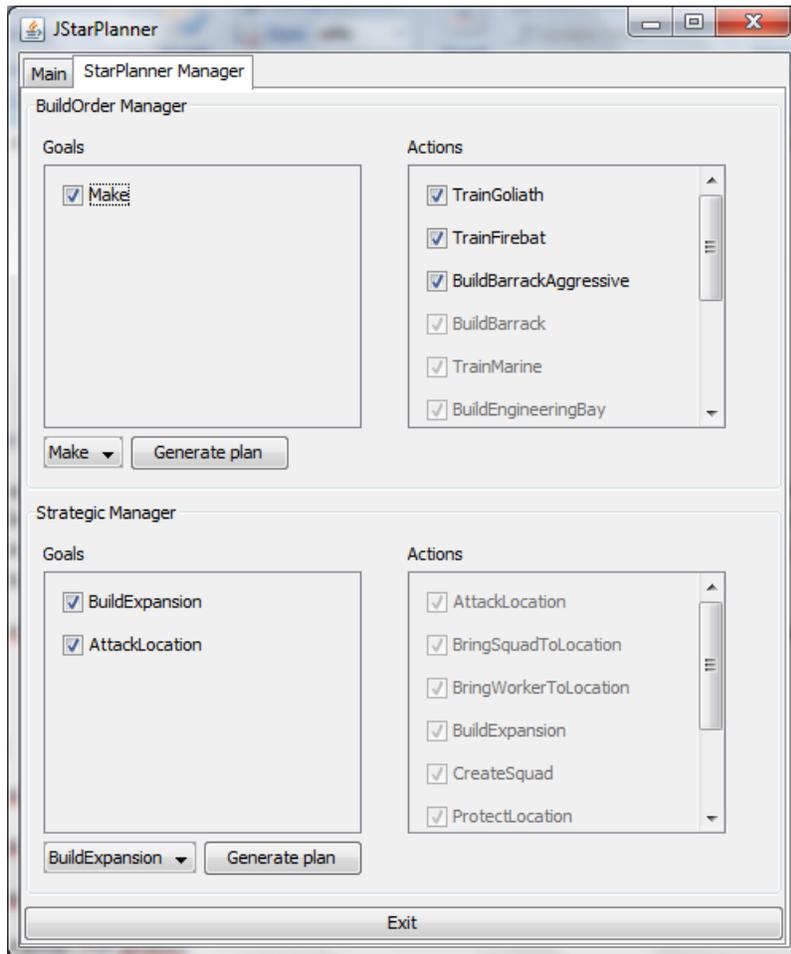


FIGURE 4 MAP SELECTOR

When a game is started, StarPlanner initiates JStarPlanner, which was explained previously.

The second option is to run StarPlanner without running StarCraft. This is used mainly to configure StarPlanner's behavior before initiating a game. When clicking this option, the first thing to do is select a StarPlanner data file. This should be located at the root of your StarCraft installation folder and usually is called "starplanner.data". If no such file exists, then type any file name and the file will be automatically created and loaded.

Now JStarPlanner is displayed. In this section, we are interested in understanding the StarPlanner Manager tab.



This tab displays StarPlanner's Goals and Actions for both the BuildOrder Planner, at the top, and the Strategic Planner, at the bottom (see Thesis document for a detailed explanation).

Each goal or action has a checkbox next to it which indicates its state: when checked, the item is enabled and thus StarPlanner can use it during planning, while when un-checked, the item is disabled. In addition, there is a **Generate plan** button for each planner to view test what plans are generated.

Unfortunately, there are no Goals or Actions in the currently version of StarPlanner that can be disabled and not completely render StarPlanner's planners useless. Furthermore, most Goals and Actions require information gathered during the game; thus, generating a plan outside StarCraft is currently impossible. This tab was mainly to demonstrate how GOAP can be configured so that Game Designers can control the AI's behavior during development.

KNOWN ISSUES

Chaoslauncher says "Cannot close while Stracraft is running"

Currently there is a bug in StarPlanner which prevents it to terminate correctly upon game exit. You will have to kill the Starcraft process.

CONTACT

For any comments/suggestions/bug please contact me at pekalicious@gmail.com