PowerGrid documentation

An overview of the PowerGrid project, how it works, and what the differences are with other Runescape bot clients.



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# Chapter 1 – Introduction

Many bot clients already exist for the MMORPG Runescape. However, since the introduction of Runescape 3, most of these bot clients have been rendered useless, as using these bot clients may cause the player to be banned. As such, only few bot clients are able to provide the functionality that is desired from a bot client without the implied risk of being banned.

The above problems, together with observations of the points where other bot clients failed on, calls for a new approach to Runescape bot development. This project aims to fill the gap left behind by the other bot clients after the Runescape 3 update, and to provide the functionality requested by its users more than other bot clients did before. This project aims to do so by making the client completely open-source. Also, to prevent direct manipulation of the Runescape client, this new bot client will not perform any byte code injection on the running Runescape client. Instead, the core of the bot client is written in C++, an object-oriented language which is somewhat similar to Java. Because of this, most of the bot client’s botting functionality will happen completely separate from the Java Virtual Machine, and as such also invisible from the Runescape client.

Putting all the above together, we present you PowerGrid. A revolutionary, open-source bot client that intends to make life easier for everyone by providing functionality that automatically classifies and stores the data from the runescape world in native (C++) objects. Because of this caching behavior, it suddenly becomes possible to plan routes across the entire world, or find the nearest object matching certain criteria even if such an object is far away.

The final goal of PowerGrid is to provide users with a tool that can play Runescape completely by itself, automatically deciding on the tasks to perform based on changes in the environment. PowerGrid will even be able to perform abstract tasks like leveling a certain skill to a certain level, or get to a certain destination. PowerGrid should then automatically decide on the concrete tasks (what methods to use for quick travel, or what method to use to train the requested skill) by effiency.

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# Chapter 2 – Overview of PowerGrid

## 2.1 – Communication with the Runescape client

The main component of any Runescape bot client is getting the information from the Runescape client, and sending actions back to the client. To achieve this between the C++ bot and the Java client, it is required to use an intermediate system provided by the Java Virtual Machine called JNI (Java Native Interface). A drawback of the JNI is, that it is a quite basic system, not at all suitable for the intensive and complex operations that a bot client requires. Therefore, PowerGrid uses a library that extends JNI and provides a more natural way to communicate with the Java Virtual Machine. This library is called JACE, and it provides a way to communicate with Java classes and objects as if they were C++ classes and objects, making

## 2.2 – Cross-platform Graphical User Interfaces

PowerGrid is written in C++, and as such, it is platform-dependant. To make it easier to use PowerGrid on multiple platforms, such as Windows, Mac OS, and Linux, PowerGrid makes use of a sophisticated library that aims to remove all platform differences, allowing the same code to work on almost all popular platforms. This library (called Qt) also features ways to dynamically load plugins, something PowerGrid will use to load additional features.

## 2.3 – High-level task descriptions in favor of direct control

PowerGrid is meant to be used with high level tasks, so for example “train mining skill to level 99”, instead of “mine this much of this type of ore at that place”. PowerGrid is then meant to automatically decide the best location and ore type between the options it knows about. This supposedly results in a more natural playing style, since PowerGrid can decide to change strategies midway and go to a different mining spot if that turns out better (for example, when the initial mining spot is very crowded). By giving high-level tasks to PowerGrid, it may be possible to use strategies that players would normally not think of, but are more efficient then conventional strategies.

# Chapter 3 – Structural overview

## 3.1 – Structural diagram of PowerGrid

## 3.2 – Summary of each of the modules in PowerGrid

## 3.3 – The process of performing tasks in PowerGrid

# Chapter 4 – Implementation

# Chapter 5 – Legal notes

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The libraries that are used for PowerGrid