Individuals Involved

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- Dr. Alan Fern (client)
  Associate Head of Research and Professor at Oregon State University

We all undertook this project because we either had a major pertaining to video games or had an interest in AI and how it is developed. Our client also teaches and researches machine learning.

PROJECT DEVAI
A Template StarCraft Artificial Intelligence:
Creating an example AI for others to learn from.

Project Description

Library Building

The purpose of the library is to create an easier way for students to familiarize themselves with the API used to interact with the game. It covers most of the important parts required of the game to play and win a match. It will also help as a starting point for others who want to include more complicated functions into the library as well as those who just want to take bits and pieces from it. The following are classes that are the focus of our library.

❖ **Economy Class**

Builds workers to gather resources and construct buildings

Gets count of in game resources

❖ **Construction Class**

Constructs the buildings in the game

❖ **Unit Action Class**

Gives individual commands to a unit
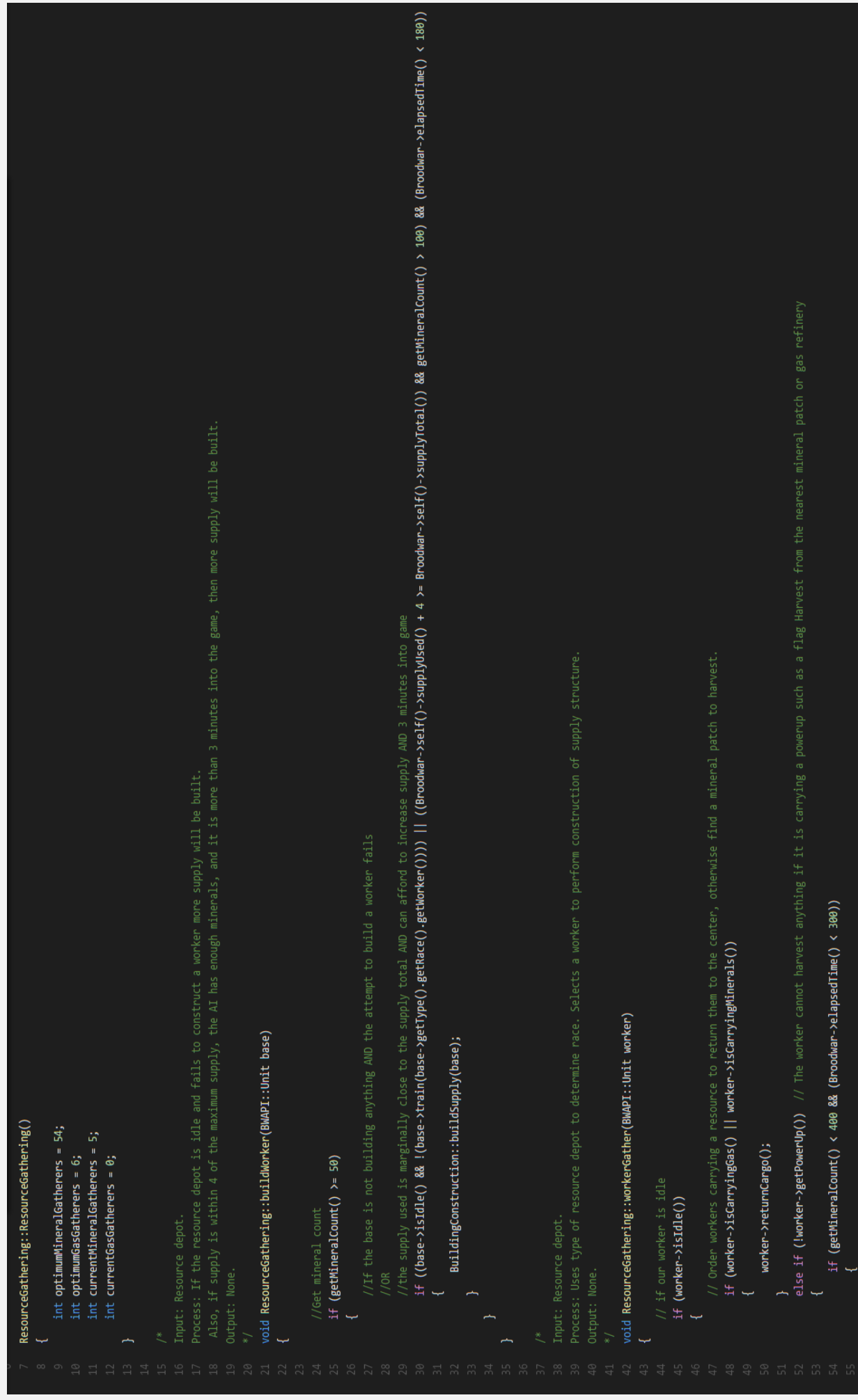
Used for buildings to train and units to move and attack

❖ **Map Tools Class**

Extension used to convert map to data to be used by agent

Main use for expansion and scouting

❖ **Player Class**

Storing of variables to track events and triggers that would otherwise be global variables

Goals

- Create example AI for future club members with an interest in machine learning to use as a starting example

- Create extensive library of functions to simplify interaction with API

- Build an example AI using the created library to show off functions and give an example to work from

- Document functions and classes for further understanding as well as include installation process and setup for the AI in game

Documentation

We will be including documentation to further explain the purposes, requirements, and effects of the classes and functions in our code. This is stored in a readme within the project source code. The readme will also include a detailed guide on any additional files that need to be downloaded to make all of our code work. Finally we will be including the instructions required to setup the environment to code in as well as how to transfer files to the appropriate game directory.

Simple AI

Our AI will be fairly simple as it is mainly an example and a way to show off the different features in our library. We chose one specific race and had some simple conditionals to do the following:

❖ **Train workers**

Workers are then sent to gather and construct any buildings

❖ **Build supply depots**

This is to increase the number of units that can be on the field

❖ **Build a barracks**

Required to train military, specifically marines

❖ **Train marines**

Army units used to attack the enemy

❖ **Find and build an expansion**

Used to increase economy and efficiency

❖ **Select all army units**

❖ **Scout the enemy**

Uses terrain analyzer to systematically find the enemy

❖ **Attack the enemy base repeatedly until victory**

Artificial Intelligence has solved many problems for games that involve taking turns, however there has not been much in the way of games played in real time. This project is to create an agent to play the game StarCraft Brood War, a real-time strategy game created by Blizzard Entertainment. The end goal is to provide a detailed AI to be used by Oregon State University students. After this project is complete, it could be expanded upon by future students in a club setting. This will be a template so that future students can strive to develop better solutions than those developed within this project.