

Lehigh University
Department of Computer Science and Engineering
Technical Report # LU-CSE-04-010

**Report on SourceForge Open Source Gaming Projects for Use
with TIELT Learning System**

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1. Introduction

From the SourceForge site:

SourceForge.net is the world's largest Open Source software development web site, providing free hosting to tens of thousands of projects. The mission of SourceForge.net is to enrich the Open Source community by providing a centralized place for Open Source developers to control and manage Open Source software development. To fulfill this mission goal, we offer a variety of services to projects we host and to the Open Source community.

As mentioned above, SourceForge is an online collaborative tool for Open Source projects. It provides forums, tech support, mailing lists, CVS repositories, download mirrors, and other services that many open source projects could not afford to purchase for themselves.

SourceForge will be specifically helpful to the development of the TIELT machine learning system by providing access to open source real time strategy games. As the benefits of TIELT have not been proven in a real word testing environment, popular game development houses will be reluctant to spend programmer time implementing the subsystem that TIELT requires to operate. By initially focusing on open source projects, we can prove the viability of the system and hopefully convince both game developers and the machine learning community that the TIELT system is one of the avenues down which machine learning and AI research will head in the near future.

2. Survey

What follows is a brief survey of the top 20 ranked projects (by activity) on the SourceForge site as of August 22, 2004. The goal is to provide a pro/con listing of the various projects to allow an informed choice as to which projects are worth investing time in. The project summaries are taken from the SourceForge site.

2.1 Natural Selection WhichBot

WhichBot is an AI for Natural Selection, the Real-Time Strategy / First Person Shooter hybrid Half-Life mod. It is intended to provide players for the alien team.

- Development Status: 4 – Beta (12928)
- Environment: Console (Text Based) (12454), Win32 (MS Windows) (13988)
- Intended Audience: End Users/Desktop (27477), System Administrators (12890)
- License: BSD License (3862)
- Natural Language: English (44693)
- Operating System: Windows 95/98/2000 (6833), Linux (21169)
- Programming Language: C++ (13762)
- Topic: First Person Shooters (677), Real Time Strategy (615), Artificial Intelligence (1125)

Latest File Releases:

commslap	commslap v0.02	November 11, 2003
jpn	JPN v0.05	July 14, 2003
whichbot	whichbot v0.92 (nsbeta)	May 21, 2004

Relevance:

As this project relies on a commercial game (Half-Life) to function, its possible use to us is limited. However, Half-Life is one of the most popular FPS games ever and an inroad into this community would achieve widespread recognition. While access to the source of the AI is available, it is most likely tied to the Half-Life engine.

2.2 Crystal Space 3D SDK

Crystal Space is an Open Source 3D SDK for Unix, Windows, and MacOS/X. It renders with OpenGL or software and features curved surfaces, volumetric fog, dynamic colored lighting, terrain engine, level-of-detail, procedural textures, portals, and so forth.

Latest File Releases:

crystal	0.98r003	July 14, 2004
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Relevance:

As Crystal Space is a gaming engine and not a game, it has very little use unless we plan to write a game as well as an AI system.

2.3 MF Conquers the Island

MFCTI is an RTS mod for Operation Flashpoint: Resistance. It enables creation of troops, vehicles, and bases. AI players can substitute for humans, allowing practice matches and co-op games. It includes a point-and-click interface and command system.

- Development Status: 5 – Production/Stable (10466)
- Intended Audience: End Users/Desktop (27477)
- Natural Language: English (44693)
- Topic: First Person Shooters (677), Real Time Strategy (615), Simulation (985)

Relevance:

This is another modification for a commercial game. The odds of this project being useful for TIELT are low.

2.4 Scorched 3D

Scorched3D is a 3D remake of the popular 2D artillery game Scorched Earth. Scorched3D can be played against the computer, other local players, and players across the Internet or LAN.

- Development Status: 5 – Production/Stable (10466)
- Environment: Win32 (MS Windows) (13988), Gnome (2167)
- Intended Audience: End Users/Desktop (27477)
- License: GNU General Public License (GPL) (38187)
- Natural Language: English (44693)
- Operating System: MacOS X (2440), Windows 95/98/2000 (6833), BSD (1334), Linux (21169), SunOS/Solaris (1932)
- Programming Language: C (13654), C++ (13762)
- Topic: Real Time Strategy (615), Turn Based Strategy (853)

Relevance:

As this game requires only rudimentary AI, this project seems to have little or no use to TIELT.

2.5 Stratagus

Stratagus is a free cross-platform real-time strategy game engine, capable of playing against human or computer opponents, network or local. It can be used to build RTS games similar to Command and Conquer, WarCraft 2, Age of Empires, and Tsar and runs under Linux, BSD, MacOS and Windows.

- Development Status: 4 – Beta (12928), 5 – Production/Stable (10466)
- Environment: Cocoa (MacOS X) (1620), Win32 (MS Windows) (13988), X11 Applications (9472)
- Intended Audience: Developers (31007), End Users/Desktop (27477)
- License: GNU General Public License (GPL) (38187)
- Natural Language: English (44693)
- Operating System: MacOS X (2440), Windows 95/98/2000 (6833), Windows NT/2000 (4860), FreeBSD (1404), Linux (21169)
- Programming Language: C (13654)
- Topic: Real Time Strategy (615)

Latest File Releases:

stratagus-2.0-linux.tar.gz	647999	1860	i386.gz
stratagus-2.0-src.tar.gz	1256025	1433	Platform-Independent Source.gz
stratagus-2.0-src.zip	1533688	1034	Platform-Independent Source.zip
stratagus-2.0-win32bin.zip	984161	3057	i386.zip

Relevance:

As the first choice of the TIELT team, Stratagus is the continuation of the Wargus gaming engine. Its open source engine and data sets make it a good candidate for modification. However, the project is fragmented and suffers from poor project management, website update problems and fragmented developer resources.

2.6 Scorched Earth Online War

Scorched Earth Online War is a dynamic multiplayer campaign system for running on-line wars using the IL-2 combat simulator. The project is a free add-on for IL-2.

- Development Status: 3 – Alpha (10499)
- Environment: Win32 (MS Windows) (14092)
- Intended Audience: End Users/Desktop (26741)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480)
- Operating System: Windows (7631)
- Programming Language: ASP (491), JavaScript (1868), Visual Basic (1875)
- Topic: Front-Ends (1769), Real Time Strategy (588)

Latest File Releases:

sedb 1.0 August 6, 2004

Relevance:

This project seems to have just been added to the SourceForge database. Very little information is available on it.

2.7 CSBot

CSBot is an IRC bot for Windows that can publish Counter-Strike, Natural Selection, and Day of Defeat games on an IRC channel.

- Development Status: 1 – Planning (13850), 4 – Beta (13251)
- Environment: Win32 (MS Windows) (14092)
- Intended Audience: End Users/Desktop (26741), Information Technology (4630), Other Audience (6081), System Administrators (12446)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480)
- Operating System: Windows 95/98/2000 (6550)
- Programming Language: C++ (13429)
- Topic: Internet Relay Chat (1118), First Person Shooters (646), Real Time Strategy (588)

Latest File Releases:

CSBot Binaries	0.46b	August 13, 2004
CSBot Installer	0.46b	August 13, 2004
CSBot Sources	0.46b	August 13, 2004

Relevance:

This project is an automated multiplayer game server. It has little, if any, relevance to the actual in-game automation or AI and as such is not an option for us.

2.8 Vega Strike

Vega Strike is a 3D OpenGL action space simulator for Windows/Linux/Macintosh allowing players to trade and bounty hunt. You start in a beat-up Wayfarer cargo ship with endless possibilities before you and just enough cash to scrape together a life.

- Development Status: 5 – Production/Stable (10911)
- Environment: Cocoa (MacOS X) (1742), Win32 (MS Windows) (14092), X11 Applications (9295)
- Intended Audience: Developers (30307), End Users/Desktop (26741)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480)
- Operating System: MacOS X (2670), Windows 95/98/2000 (6550), OS Independent (20763), Linux (20693)
- Programming Language: C (13244), C++ (13429), Python (3312)
- Topic: Real Time Strategy (588), Role-Playing (1684), Simulation (955), Graphics (807), Artificial Intelligence (1118), Interpreters (950)

Latest File Releases:

texturizer	1.0	January 9, 2003
vegastrike	0.4.1	September 22, 2003

Relevance:

This is a well-developed, mature, stable project with a plausible real-time strategy use. The only drawback is that it seems to be focused on economic and role-playing rather than combat. Still, it is worth keeping an eye on.

2.9 Egoboo

Egoboo is a working cool 3D dungeon crawling game in the spirit of nethack. The original version was Windows/D3D only, but we have since ported the project to SDL/OpenGL. Currently we have Windows and Linux binaries available.

- Development Status: 4 – Beta (13251)
- Environment: Win32 (MS Windows) (14092)
- Intended Audience: Developers (30307), End Users/Desktop (26741)
- License: GNU General Public License (GPL) (37476)
- Operating System: Windows 95/98/2000 (6550), Linux (20693)
- Programming Language: C (13244)
- Topic: First Person Shooters (646), Real Time Strategy (588), Role-Playing (1684)

Latest File Releases:

Egoboo	2.22	December 10, 2001
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Relevance:

There is not much available information on this project, but what is there suggests that it is more of an adventure game than a strategy game. There does not appear to be an option for integrating AI agents into the program.

2.10 Pizza Game

Pizza Game is a real-time 3D game in which you can manage your own pizza restaurant. It will be supported on multiple platforms including Windows and Linux and is utilizing the OGRE 3D engine.

- Development Status: 3 – Alpha (10499)
- Environment: Win32 (MS Windows) (14092), X11 Applications (9295)
- Intended Audience: End Users/Desktop (26741), Other Audience (6081)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480), Swedish (201)
- Operating System: Windows 95/98/2000 (6550), Linux (20693)
- Programming Language: C++ (13429)
- Topic: Real Time Strategy (588), Simulation (955), Graphics (807)

Latest File Releases:

Pizza Game 0.02a August 16, 2004

Relevance:

This looks like a fun, fresh approach to the RTS genre. In the words of the website, “Ares has put together a solid framework to manage the control of the customers and employees in the game. They visit the restaurant, find their way around walls, walk through doorways, sit at tables, take customer orders at tables, and cook pizzas.” There is plenty of opportunity for AI development here, and the project is far enough along that there are a few releases to work with.

2.11 FreePop

FreePop is a multi-platform tile-based game based on the great old game Populous 2 by Bullfrog Productions Ltd., but much improved.

- Development Status: 3 – Alpha (10499)
- Intended Audience: End Users/Desktop (26741)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480)
- Operating System: OS Independent (20763)
- Programming Language: C++ (13429)
- Topic: Real Time Strategy (588)

Latest File Releases:

freepop 0.5.0 August 19, 2004

Relevance:

This is a classic “God’s-eye-view” civilization simulation game. It has plenty of opportunity for AI incorporation. Unfortunately, the development on this project is very slow. The recent spurt of activity does not align with the general history of the project, whose updates came nearly one year apart. We may not be able to rely on this project.

2.12 Boson

Boson is an OpenGL real-time strategy game, with the feeling of Command and Conquer or StarCraft and OpenGL support. It is designed to run on Unix/Linux computers and is built on top of the libkdegames, kde and Qt libraries.

- Development Status: 3 – Alpha (10449)
- Environment: KDE (1713)
- Intended Audience: End Users/Desktop (27477)
- License: GNU General Public License (GPL) (38187)
- Natural Language: English (44693)
- Operating System: POSIX (5040)
- Programming Language: C++ (13762)
- Topic: K Desktop Environment (KDE) (423), Real Time Strategy (615)

Latest File Releases:

boson 0.10 May 1, 2004

Relevance:

Promising system. The graphics are relatively contemporary and the entire system is free with no dependencies on any copyrighted material. The project only compiles on Linux at the moment, but it bears looking into.

UPDATE: This system takes a **long** time to compile, but the dependencies are few and easily managed. Once running, the game is interesting; but as accelerated drivers do not install on my test system it runs extremely slow.

2.13 Widelands

Widelands is inspired by Bluebyte's Settlers II and will someday be the logical extension of this game (although you do not need the original game). Play it on Windows or Linux against human and AI opponents.

- Development Status: 1 – Planning (15125), 2 – Pre-Alpha (10922), 3 – Alpha (10449)
- Environment: Win32 (MS Windows) (13988), X11 Applications (9472)
- Intended Audience: End Users/Desktop (27477)
- License: GNU General Public License (GPL) (38187)
- Natural Language: English (44693), German (4445)
- Operating System: Windows (7259), POSIX (5040)
- Programming Language: C++ (13762)
- Topic: Real Time Strategy (615), Simulation (985)

Latest File Releases:

widelands build-6 October 18, 2003

Relevance:

This project seems simple but might be useful for a proof-of-concept implementation. The graphics are primitive but not awful, and it does include a built in AI subsystem.

2.14 Wargus

Wargus is a data set for the Stratagus game engine.

- Development Status: 5 – Production/Stable (10911)
- Intended Audience: End Users/Desktop (26741)
- License: GNU General Public License (GPL) (37476)
- Operating System: Windows (7631), POSIX (4859)
- Programming Language: C (13244)
- Topic: Real Time Strategy (588)

Latest File Releases:

wargus 2.1 July 1, 2004

Relevance:

This is just a mod for the Stratagus project. Wargus does not stand on its own, but as we plan to make extensive use of Stratagus, we should keep this in mind for reference or testing.

2.15 Robot Fighting Generation

This project is a real-time 3D game based on anime robots.

Development Status: 1 – Planning (13850)

Environment: Win32 (MS Windows) (14092)

Intended Audience: End Users/Desktop (26741)

License: GNU General Public License (GPL) (37476)

Natural Language: Italian (752)

Operating System: Windows (7631)

Programming Language: C++ (13429), Perl (5317)

Topic: Real Time Strategy (588)

Latest File Releases:

This Project Has Not Released Any Files

Relevance:

This project seems to have just begun. There are no released files and the project is still in the planning phase. Additionally, the primary language is Italian, which would pose a problem for our English development team.

2.16 Quantum Star SE

QSSE is a browser based space strategy game involving Mining, Combat, Exploration, Planets and Clans played in real time. Developed as an easy-to-install web based game, Q-S will operate on almost any PHP enabled server supporting MySQL or PostgreSQL.

- Development Status: 5 – Production/Stable (10911)
- Environment: Web Environment (15716)
- Intended Audience: Developers (30307), End Users/Desktop (26741), System Administrators (12446)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480)
- Operating System: OS Independent (20763)
- Programming Language: JavaScript (1868), PHP (9192)
- Topic: Real Time Strategy (588), Dynamic Content (4601)

Latest File Releases:

Quantum Star SE (Public)	Quantum Star SE 2.2.0 Beta-3	July 19, 2004
Development Code Snapshots	Quantum Star SE dev-04.24.2004	April 23, 2004

Relevance:

Although this is a mature, stable RTS project, its chief medium is the Internet. Since our development efforts will be coded in C++ for a local scope, they would not be well met by this networked project coded in PHP.

2.17 WorDoG

WorDoG stands for World Domination Game. It is basically a derivate from Risk, the popular board game. The project aims to provide this strategic multiplayer game on an HTML-only basis. All necessary operations are done server-side by PHP and a database.

- Development Status: 4 – Beta (13251)
- Environment: Web Environment (15716)
- Intended Audience: End Users/Desktop (26741)
- Natural Language: English (45480), German (4515)
- Operating System: OS Independent (20763)
- Programming Language: PHP (9192)
- Topic: Board Games (683), Real Time Strategy (588), Turn Based Strategy (800)

Latest File Releases:

NuGE	Nuke Game Engine 0.1	March 21, 2004
wordog	WorDoG 0.6 beta4	May 17, 2003
wordog media	Sunstone map	January 6, 2003

Relevance:

This project is similar to Quantum Star in that it will be server based and coded in PHP. Additionally, since it will have a turn-based focus, it will not be suited well for our proposed AI implementation.

2.18 FreeCNC

FreeCNC is a real time strategy engine that supports the original Command and Conquer data files (not included).

- Development Status: 3 – Alpha (10449)
- Environment: Cocoa (MacOS X) (1620), Win32 (MS Windows) (13988), X11 Applications (9472)
- Intended Audience: Developers (31007), End Users/Desktop (27477)
- License: GNU General Public License (GPL) (38187)
- Natural Language: English (44693)
- Operating System: BeOS (446), MacOS X (2440), Windows 95/98/2000 (6833), Linux (21169)
- Programming Language: C++ (13762)
- Topic: Real Time Strategy (615)

Latest File Releases:

FreeCNC-Binary-BeOS	0.2.0-tp2	February 13, 2002
FreeCNC-Binary-Linux	0.2.0	August 1, 2002
FreeCNC-Binary-Win32	0.2.0	August 1, 2002
FreeCNC-Source	0.2.0	August 1, 2002

Relevance:

This project relies on the original Command and Conquer data sets. It will probably suffer the same fate as the original Wargus project. However, the site seems to be currently functioning and new support for Red Alert (the sequel) was added in January of this year. The project might be worth checking out.

2.19 GalaxyHack

Multiplayer AI script based strategy game.

- Development Status: 4 – Beta (13251)
- Environment: Win32 (MS Windows) (14092), X11 Applications (9295)
- Intended Audience: End Users/Desktop (26741)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480)
- Operating System: Windows (7631), Linux (20693)
- Programming Language: C++ (13429)
- Topic: Real Time Strategy (588), Artificial Intelligence (1118)

Latest File Releases:

galaxyhack 0.6 August 21, 2004

Relevance:

This project looks promising: although it has a network focus, it has a detailed AI scripting core that could easily be used by our development team. Unfortunately, it has a sporadic development cycle.

2.20 The Black Legacy, An MMORPG 3D Project

The Black Legacy is an MMORPG project under Linux, but it also works on Windows. We are using OpenGL and SDL to make a 3D medieval environment.

- Environment: Win32 (MS Windows) (14092), X11 Applications (9295)
- Intended Audience: Developers (30307)
- License: GNU General Public License (GPL) (37476)
- Natural Language: English (45480), Spanish (1868)
- Operating System: Windows 95/98/2000 (6550), Linux (20693)
- Programming Language: C++ (13429)
- Topic: Multi-User Dungeons (MUD) (911), Real Time Strategy (588), Role-Playing (1684), 3D Rendering (788), Networking (1456)

Latest File Releases:

Black Legacy Tools	Blender To Black Legacy	April 11, 2004
source code	support files	July 13, 2004
The Black Legacy Linux	The Black Legacy v0.3.0	September 19, 2003
The Black Legacy Windows	The Black Legacy v0.3.0	March 7, 2004
Windows patch	Windows Patch v0.0.1	May 23, 2003

Relevance:

This project is more focused on the RPG aspect than the RTS aspect. Additionally, there does not appear to be a viable stable release yet. The project is still primarily focused on development.

3. Summary

The repositories on SourceForge offer thousands of open source projects that might meet the needs of TIELT. The ones reviewed above are only a small subset of the Real Time Strategy section. Most projects seem to suffer from the plight of small open source projects in that they are disorganized and have large gaps in development time. Almost all projects are marked as Beta or Alpha code and some have released files over a year old. This all means more work for the TIELT team since uncompleted and undocumented CVS code will have to be used in most of these projects.

The current forerunners look to be Stratagus, FreeCNC, and Boson. These projects have working clients and available source code. They offer the closest match for what we are seeking: real-time strategy games with extensive options for implementing AI agents.

At-A-Glance Evaluation

Game	Genre	Maturity Level	Applicability (1-5)	Recommendation
WhichBot	FPS	Beta	2	No
Crystal Space	SDK	Beta	1	No

MF Conquer	RTS	Production	1	No
Scorched 3D	TBS	Production	1	No
Stratagus	RTS	Production	5	Yes
Scorched Earth Online	RTS	Alpha	1	No
CSBot	FPS	Pre-Alpha	1	No
Vega Strike	RTS	Production	3	Maybe
Egoboo	RPG	Beta	1	No
Pizza Game	RTS	Beta	3	Maybe
FreePop	SIM	Alpha	4	Maybe
Boson	RTS	Alpha	5	Yes
Widelands	SIM	Alpha	2	No
wargus	RTS	Production	5	Yes
Robot Fighting Generation	RTS	Pre-Alpha	1	No
Quantum Star SE	TBS	Production	2	No
World Domination Game	TBS	Beta	2	No
FreeCNC	RTS	Alpha	4	Yes
GalaxyHack	RTS	Beta	3	Maybe
The Black Legacy	RPG	Pre-Alpha	1	No