

Towards fast prototyping of IVAs behavior: Pogamut 2

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Abstract. We present the platform for IVAs development in the human like environment of the first-person shooter game Unreal Tournament 2004. This environment is extendible and supported by vast community of users. Based on our previous experience the problem of fast verification of models of artificial intelligence or IVAs is in implementation issues. The developer spends most of his time solving technical environment dependent issues and malfunctions, which drives him away from his goals. Therefore our modular platform provides a tool, which helps solving those problems and the developer can spend saved time by solving another AI based issues and model verification. The platform is aimed for research and educational purposes.

1 Introduction

The development of a complex behavior of an *intelligent virtual agent* (IVA) acting in a human-like 3D world is in general very hard. IVA is an embodied agent, which is graphically represented by an avatar in the environment. There are a lot of aspects to the IVA aside from the behaviors like skeletal animations, face expressions, etc. but our platform is focused only on prototyping of the IVA's behavior.

Nowadays, there are a lot of applications featuring IVAs including serious games [1], therapeutic tools [2], etc. There are some tools both commercial [3] and freeware [4, 5] that can be used for creation of IVA's behavior. Commercial tools are expensive and lack connection to 3D world while freeware tools lack IDE.

There is no such a platform that would combine mature and extensible virtual world and IDE for developing IVAs. In this paper, we present the toolkit Pogamut 2 that aims at filling this gap.

2 Pogamut 2

Pogamut 2 integrates five main modules: (1) Unreal Tournament 2004 (UT04), (2) Gamebots2004 (GB04), (3) Parser, (4) Agent library, (5) IDE.

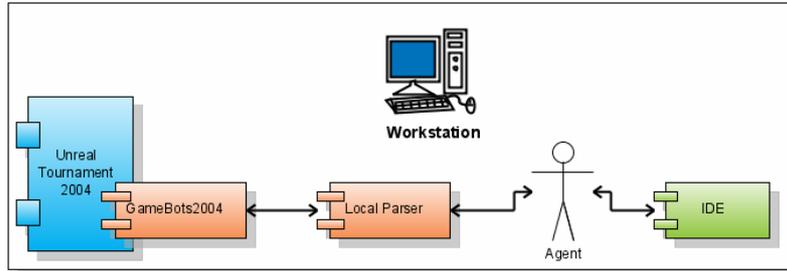


Fig. 1. Platform architecture overview

Unreal Tournament 2004 is a commercial game, which is used as a virtual world. Main feature is extensibility and environmental editor that comes out of the box.

The *Gamebots 2004* is a built-in server in the UT04, which export information from UT04 for the *Agent*. We have extended the old version of GameBots [5] and added additional functionalities containing exporting navigation points, ray tracing, commands for replay recording, etc.

The *Parser* translates text messages of the GB04 to Java objects.

The *Agent library* is a package of Java classes. It provides (a) a memory storing variety of sensory information, (b) functional primitives for the control of IVA's body, (c) an inventory to manage items the agent picks up, (d) methods for movement around the map that are solving navigation issues, including A*.

The *IDE* is made as a plug-in for NetBeans™ development environment. It provides help in important stages of work – development, debugging and experimenting. It contains: (a) scripting of agent's behavior (Java, Python), (b) access to the library of IVAs, (c) tools for debugging – an inspector of internal agent variables, a viewer of agent's memory, viewers for logs, etc., (d) supports experiments with declarative rules using rule based engine JBoss Rules [6]

The Pogamut 2 beta version is available at our webpage [7].

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