

Proposal for  
iSnake - Intelligent Multiplayer Snake  
<http://isnake.sourceforge.net>

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## Abstract

iSnake aims to bring the fun and simplicity of snake game (popular among cell phone users) with some new features. It includes a computer controlled intelligent opponent whose aim is to challenge the human players during the game. It also has multiplayer feature that allows more than one players to play a game over a network. These two features of iSnake is the reason for it being a very absorbing game. The simplicity of this game makes it an ideal candidate for our research on multiplayer functionality and artificial intelligence in games.

## 1 Objectives

This game aims to change the way people think of traditional snake game. It will offer the experience of commercial multiplayer games to the player retaining the simplicity of traditional snake game. The main objectives of this project are:

- Create a snake game that will have all the functionality of traditional snake games.
- Introduce multiplayer functionality in the game that will allow several players to play a game simultaneously. It should be able to give the experience of a real time multiplayer game to the players.
- Introduce computer controlled intelligent opponent (unique feature of this game) to make the game more challenging and interesting. The movement and action of intelligent opponents will be controlled by computer whose aim will be to eat the food before human players capture it.

## 2 Introduction

Snake game is quite popular among mobile phone users. This project aims to explore some new dimensions in snake game while retaining the fun and simplicity associated with traditional snake games. iSnake includes autonomous intelligent opponent snake that will challenge the human players during the game and multiplayer functionality that allows more than one player to play a game over a network.

Computer controlled intelligent snakes, whose aim is to eat the food before the other players, appear in the game field. Two path finding algorithms viz: Blackmamba and Viper have been developed to embed intelligence into these snakes. Profiling of these two algorithms suggested that Viper implementation is more efficient in path computation procedure. The feature of computer controlled autonomous intelligent opponent snakes has not been spotted in any variants of Snake game and is hence unique feature of iSnake.

### 3 Components of iSnake

iSnake consists of four components that work together to provide the experience of a complete on-line multiplayer game. The integration between these four components is illustrated in Figure 1

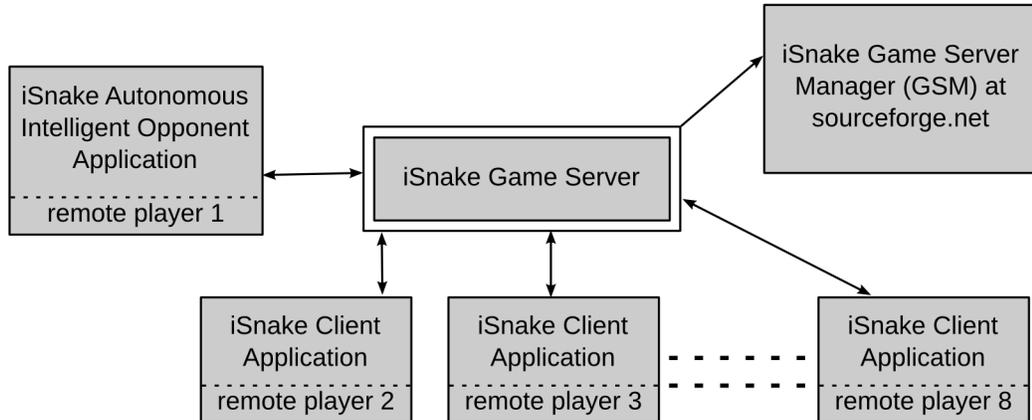


Figure 1: Major components of iSnake project

**iSnake Client Application** It allows remote players to join a game server and play the snake game hosted on that server. It also provides chat messaging functionality among the players active in the game.

**iSnake Autonomous Intelligent Opponent Application** This application is a clone of iSnake client application with an exception that the InputHandler (which is attached to the keyboard of local play in iSnake client application) is replaced by a module that implements the path finding algorithm. This module joins a game server just like a remote human player and plays the game to challenge the human players during the game.

**iSnake Game Server** Game server is based on Client Server Multiplayer game architecture. It is used to host a iSnake game which can be joined and played by remote players over a network. It maintains the state of the game which is transmitted to each remote player in every game cycle.

**iSnake Game Server Manager (GSM) at sourceforge.net** iSnake GSM at sourceforge.net is used to manage information about all the iSnake Game servers hosted on the Internet. It acts as a central repository of the active game servers that can be joined by any remote player.

## 4 Brief overview of iSnake project management

iSnake project has been registered at sourceforge [<http://isnake.sourceforge.net>] which provided most of the project management resources used by iSnake team members. Subversion repository provided by SF was used to manage the source code for iSnake. Collaboration on project documents (including prototype designs, project plan, TODO list, etc) was done using WIKI provided by SF. JUnit tests were developed to independently test some of the modules before their integration in the main development tree.

Almost every portion of the source code contains full code documentation conforming to Javadoc standards. The two path finding algorithms that implements intelligent opponent in the game has been fully documented with illustrations. The protocol devised for communication between game server and clients has also been well documented.

## 5 Market Viability

On-line gaming is a booming industry. As iSnake has been deployed using Java Web Start technology it can be easily used by commercial gaming portals like [Zapak.com](http://Zapak.com). Moreover, if ported to Mobile phone platform, it can be deployed as revenue generating (as the client applications would use connectivity services like GPRS, CDMA, etc) add on service by mobile phone operators. The introduction of high speed ADSL Internet introduced by Nepal Telecom has created exciting new possibilities for on-line multiplayer games like iSnake in Nepal.