

# Space Invaders

- Retro graphics and feel in the entire game.
- 3D objects of ships, aliens, missiles made in blender and rendered in openGL using self made object loader. Triangulation of faces was done and different parts were given different looks
- Our game supports two types of modes :- **Co-op mode** and **Competitive mode**
- In Co-op mode, players will play with each other against AI aliens. There is an option for having AI ships as well in the single player mode
- In Competitive mode, players will play against each other, with every man for himself
- On starting the game, the player has two options :- **Single-Player** with only AI and **Multi-Player** with other players
- Number of connected players before the starting is shown
- IP of the player is shown such that it is easier for the other players to join using this IP
- Ship can move horizontally and vertically. Also, it can rotate clock-wise or anti-clockwise
- Each player has a unique ship with central part of the ship having unique color
- Number of lives of the player is shown
- Score of all the players (including AI) is shown

- High-scores of the players in the game are maintained and updated.
- Two types of view mode is supported :- **Bird's Eye View** and **Third Person's View**
- In Third Person's View, health bar is also shown
- Limited number of heat seeking missile targeting the closest threat
- Gas-particles effect on launching of missiles
- Explosion effect on destroying a ship
- Sound effects have been added throughout the game. Different effects are played on different threads so that no lag takes place
- Doxygen has been used to generate entire documentation of the code
- Very elegant AI for 3 different entities: ships, aliens and missiles
- Missiles are designed to track the enemy and change direction accordingly, but only if its in its field of view.
- Aliens are designed to turn in direction of and hone in to the nearest player .
- Ships are designed to track down the nearest alien and turn in its direction.
- In the competitive mode the AI ships track down other ships and try to shoot them down.
- The mode of aliens changes with time and they become more and more attacking.
- Any number of players can join the game without specifying the number of people
- Entire network component is threaded, all sending and receiving of messages takes place in parallel
- These players can join at any time of the game. Not necessarily before the game is started

- Players who get disconnected(timeout of 10 seconds) will be **able to join the game once their connection resumes**
- At any given time one player does the computation of the AI. In case this player gets disconnected then the this virtual AI server gets shifted to another PC and a check is kept to ensure that only 1 of them becomes the AI computer.
- If the player who was the virtual server gets removed, then one of the existing player will become the virtual server
- Very efficient transfer of data. Not transferring the whole data structure, just the required data in form of strings which are parsed and then data is extracted
- Once the game finishes, high scores of the current game is displayed and the high scores of all time
- Proper makefile and read me. Everything that was mentioned in the design doc was implemented.