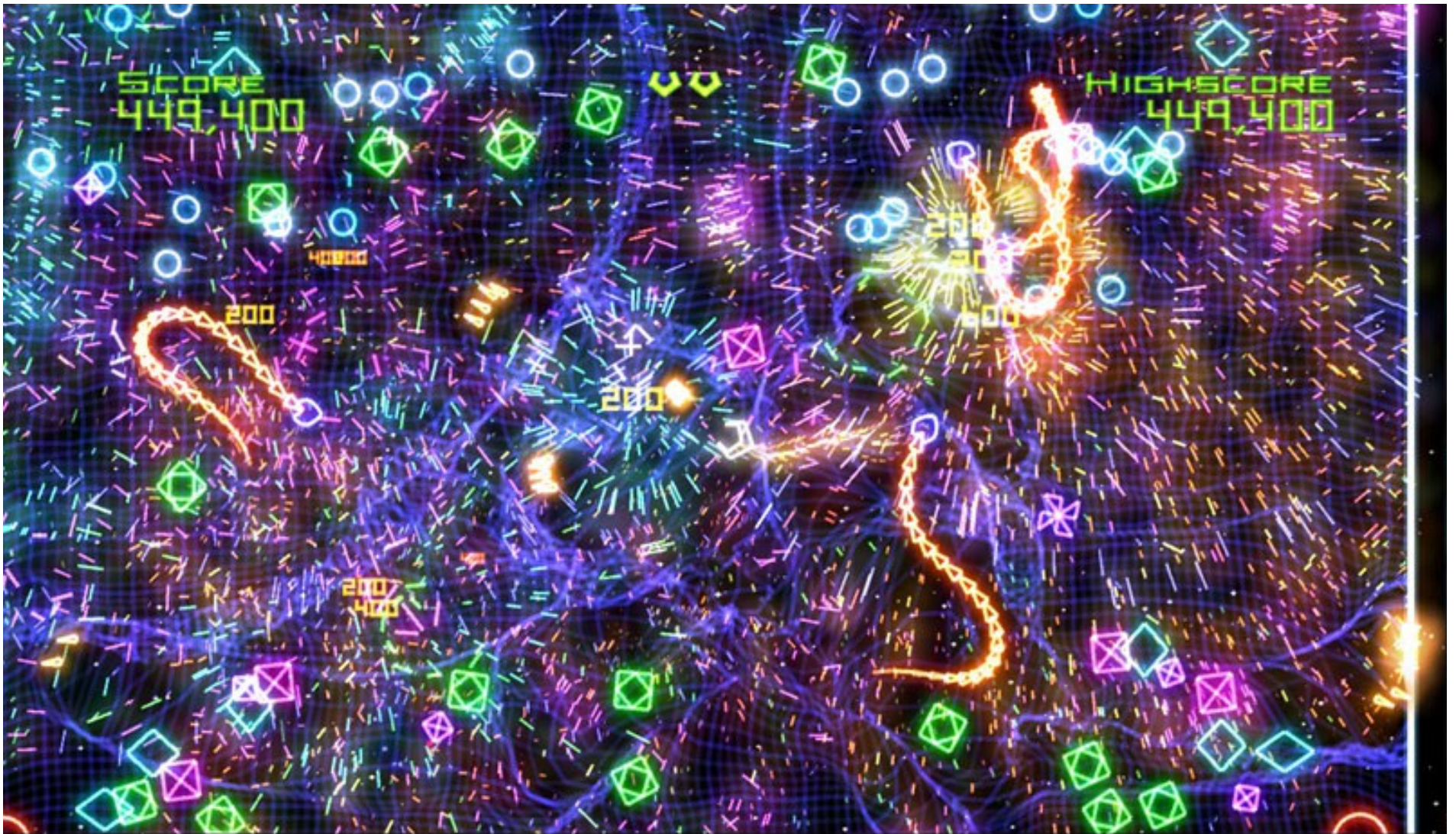


# Geometry Wars Retro Evolved (clone)



# Goals

- Stay alive (don't lose all lives).
- Destroy Enemies.
- Earn lives.

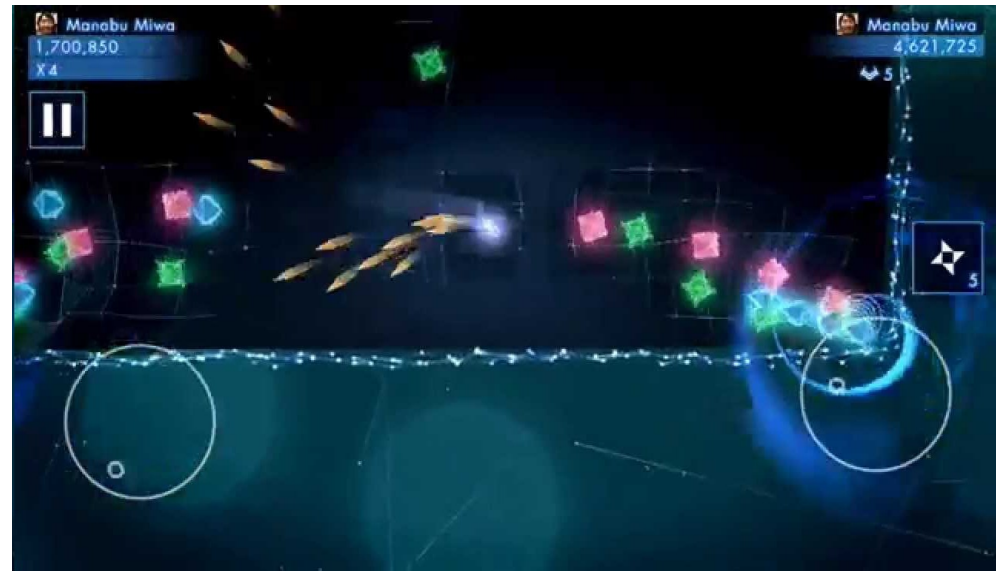
# Game Logic

- 3 Lives – Player starts with three lives and may earn more based on points.
- Game ends when player is out of lives.
- Points earned for killing enemies.
- No specific levels, but difficulty metric increases based on time.
- Difficulty resets temporarily, when the player loses a life but ramps up fast.
- All on-screen enemies are destroyed when the player loses a life, temporarily clearing the level.



# Inputs

- Twin-stick
  - Left + Right Joystick on game pad.
  - Button to drop mines.
  - Buttons to control pausing, etc.
- Dual virtual joysticks + virtual buttons for mobile version.



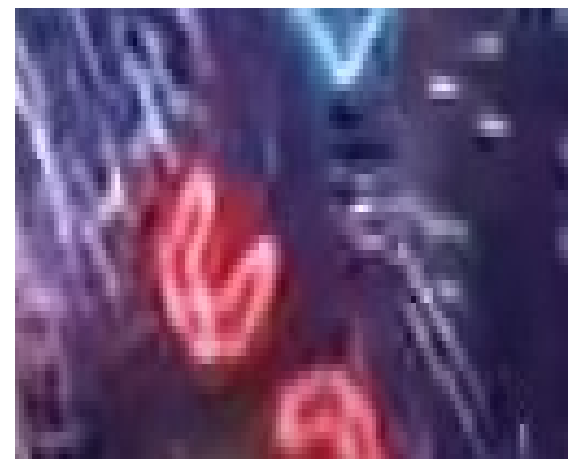
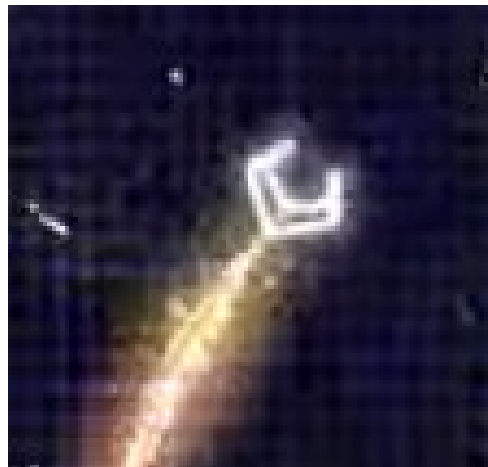
# Player

- Image using physics for movement and collision.
- Moves in any direction based on left stick input.
- Moves in any direction based on right stick input.



# Enemies

- Seven (7) types – **Pinwheels**, **Diamonds**, Green Squares, Pink Boxes, Snakes, Jacks, **Pac Men**.
  - AI Note: We'll be separating the 'ai' for enemies into distinct 'brain' modules.
  - Spawning Note: I will simplify this to a quadrant based random spawning.



# Obstacles

- **Black Holes** - Both obstacles and strategic elements. They appear randomly at higher difficulties.
  - Firing on them activates them.
  - Once activated, they stay alive for a fixed amount of time, sucking in anything nearby, including enemies and player.
  - Firing at an activated hole for a prolonged period will destroy it.



# Weapons

- **Cannon** - Starts as dual projectile, speeds up and increases projectile count and spread (randomly) based on points earned.
  - Upgrades only last for short time, then weapon goes back to default starter config.



- **Mines** - When a 'mine' is deployed, all enemies on screen are destroyed.
  - Start with 3 mines, earn more via points.

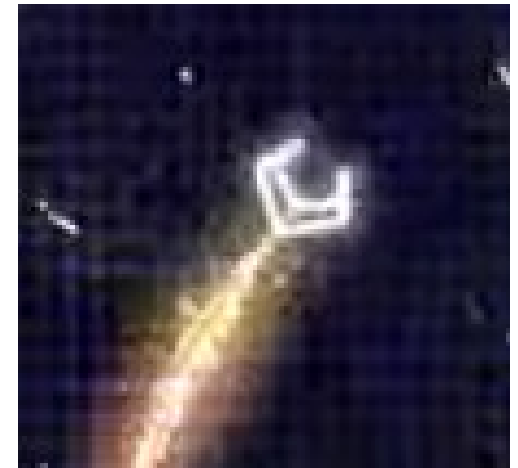


# Camera and World

- **Camera** - Fixed (Tracks Player)
- **World** - Bounded area, slightly larger than screen. Player may not move beyond bounds.
  - Parallax starfield
  - Perturbable grid.
  - Neon border.

# Effects

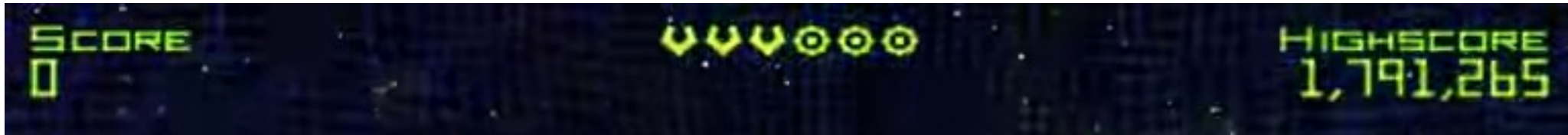
- Radial Explosions and Trails



- Grid perturbation.



# HUDs



- Score
- High Score
- Lives
- Mines

# Optimizations and Extras

- Caching – We may end up caching objects and calculation results.
- Extras – Possible things we'll cover
  - Re-mapping inputs.
  - Particle Alternatives
  - Grid Perturbation

# Links

- Moby Games Listing:  
<http://www.mobygames.com/game/geometry-wars-retro-evolved>
- IGN Wiki:  
<http://www.ign.com/wikis/geometry-wars-retro-evolved/Enemies>
- YouTube Video of game:  
<https://www.youtube.com/watch?v=OxtZUURTHzs>