CS563 GAME PROJECT
THE MAN WHO SAVES THE UNIVERSE

BY ABC STUDIOS

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Outline

- Plot
- Aim of the Game
- Features
- Game Engine Features

Plot

- Space Age passed, Galaxy Age begun.
- Nations become one singular entity.
- Struggle for power.
- A hidden enemy revealed.
- Human nations united against this threat
- A layer of molecules created by the compression of the human brain was set up to protect the world :D.
- Two great Turkish warriors lead the defense

Aim of the Game

- You are sent by the world union to save the universe.
- You find yourself in a brutal space battle against the unknown enemy.
- You are in the role of a Turkish captain who controls a space ship to survive this brutal battle.
- Lead by the two Turkish heroes Murat & Tayfun

May the force be with you!

Features

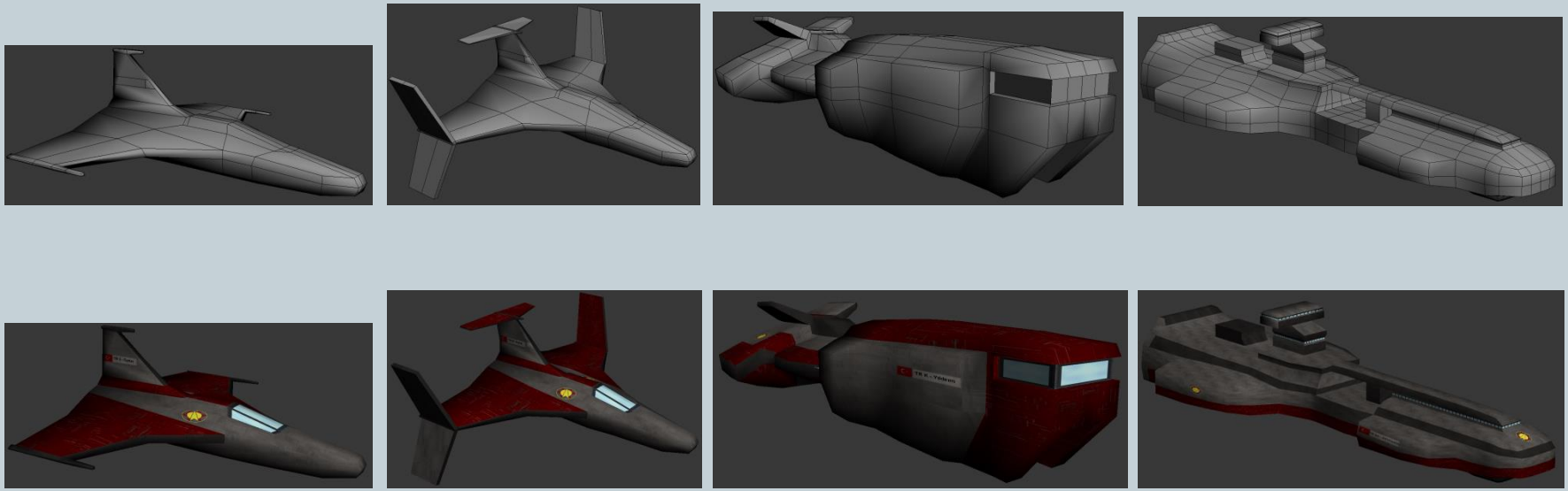
- General Features
- Rendering
  - Modelling
  - Texture design
  - Shaders
- Multimedia Content
  - Video & Sound
- Animations
- Artificial Intelligence
- User Interface

General Features

- General Features
  - Variety of Ships
    - Fighters, Bombers, Cruisers, Battleships
  - Component Based Design
    - Guns, Turrets, Shield Generators, Engines, Comm. Antenna
  - Destroyable Components
  - Variety of Guns
    - Autocannons(Fast firing, low damage, high bullet speed)
    - Lasers(Slow firing, high damage, slow bullet speed)
      - Bypasses shields generators

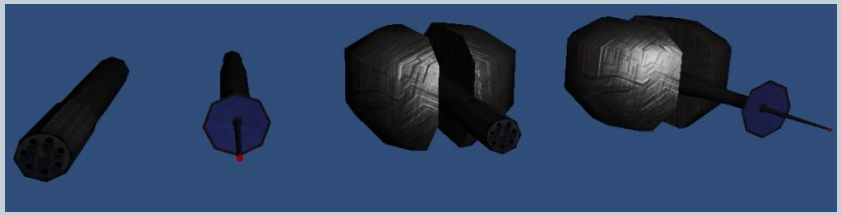
Rendering - Modelling

- Modeling: 3d Studio Max
  - Spaceships

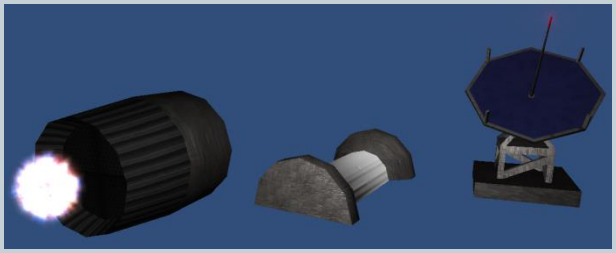


Rendering - Modelling

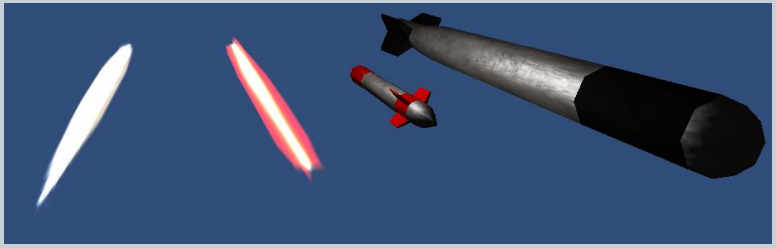
- Modeling: 3d Studio Max
  - Ship Components
    - Guns & Turrets



    - Engines,Shields & Comm. Antenna

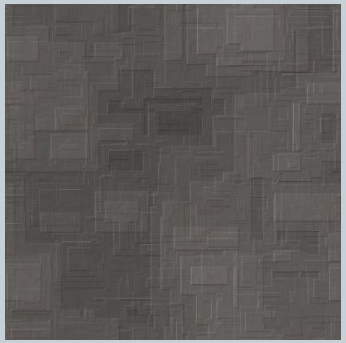
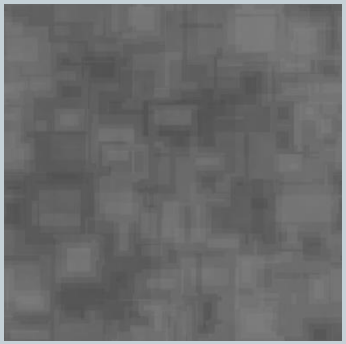
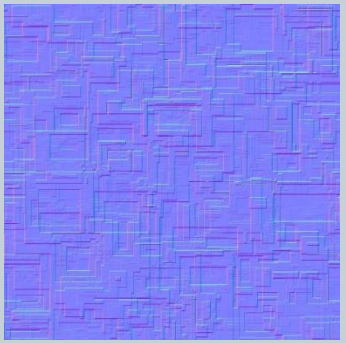


  - Bullets, Lasers, Missiles
    - Bullets & Lasers as Billboards



Rendering – Textures Design

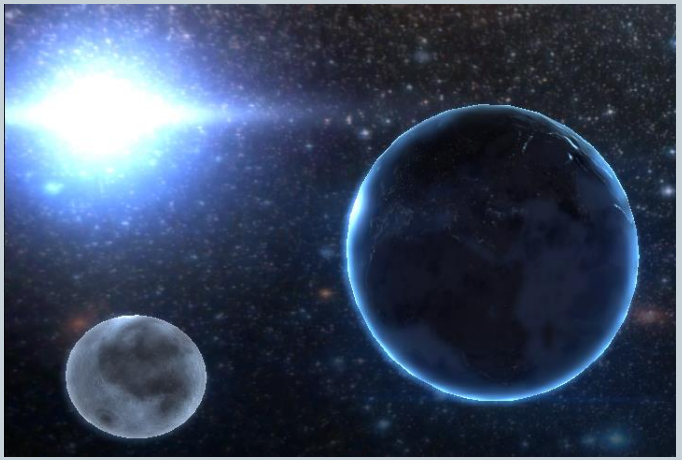
- Textures: GNU Image Manipulation Library(GIMP)
  - Diffuse Textures
  - Gloss Maps
  - Normal Maps

  - High Resolution Skyboxes
    - Hubble Telescope
    - Spherical Mapping(3ds Max)
    - Exported as Skybox

Rendering – Shaders

- Shaders – CG
  - Custom Shaders
    - Planet Shader
      - Rim Color
        - Adds w.r.t. dot(viewDir, normal)
        - Maximizes at borders
      - Cloud Map
        - Blended & Animated UV
      - Night Sky
        - Blends w.r.t dot(LightDir, normal)
  - Built-in Shaders
    - Phong Shading
    - Normal Mapping
    - Gloss Mapping
    - Post-Processing Effects
      - Glow Effects
      - Sun Flares



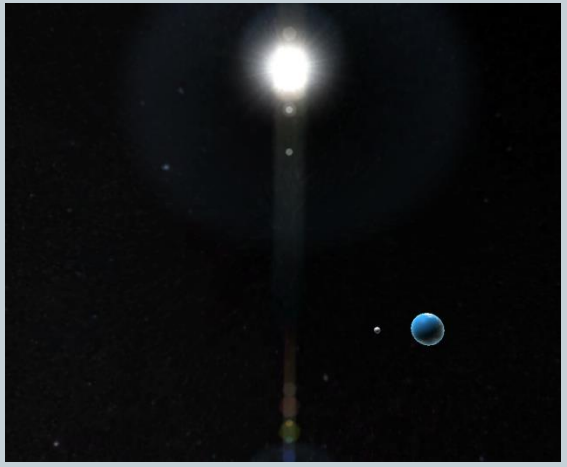
Multimedia Content – Videos & Sounds

- Video Editting: Adobe After Effects
  - Green Channel Toning
    - Cockpit colors
  - Salt & Pepper Noise
    - Realistic Comm. Interference
  - Alpha Channel
  - Quicktime Movie Format
- Sound Editting: Audiocity
  - Guns
  - Engines
  - Hit Effects
  - Ambient Sounds & Music

Wing Commander Murat

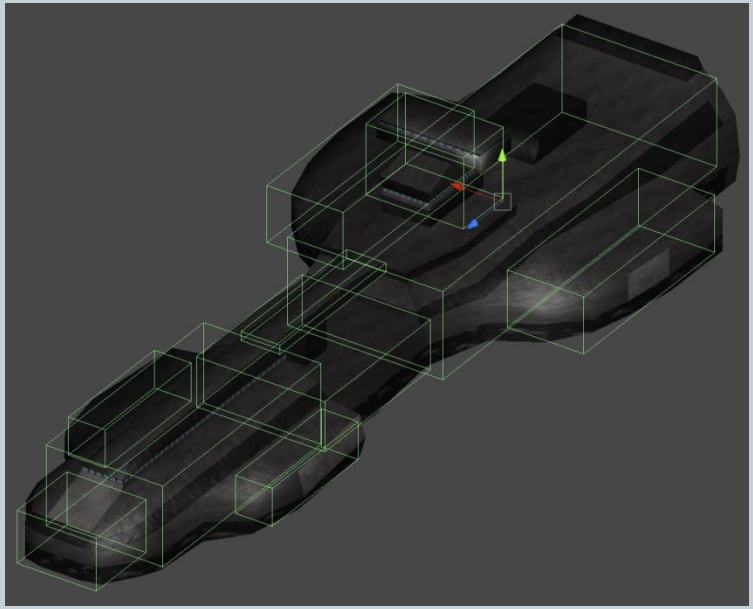
Animations

- Particle Systems
  - Engine Exhaust
  - Hit Effects
  - Explosions
    - Detonator Framework
      - Ben Throop, Summer of Code
- Rigidbody Animations
  - Turret Tracking
  - Rotating Turrets & Muzzle Flashes
  - Celestial Motion
- Physics Based



Animations

- Physics Based Animations
  - Integrated Nvidia PhysX Engine
    - Ship Controls
      - Torque(Yaw, Pitch, Roll)
    - Drag Force(Constrainted Velocity)
    - Engine Impulse
  - Collisions
    - Compound Colliders
      - Box Colliders
    - Rigidbody Collision Response

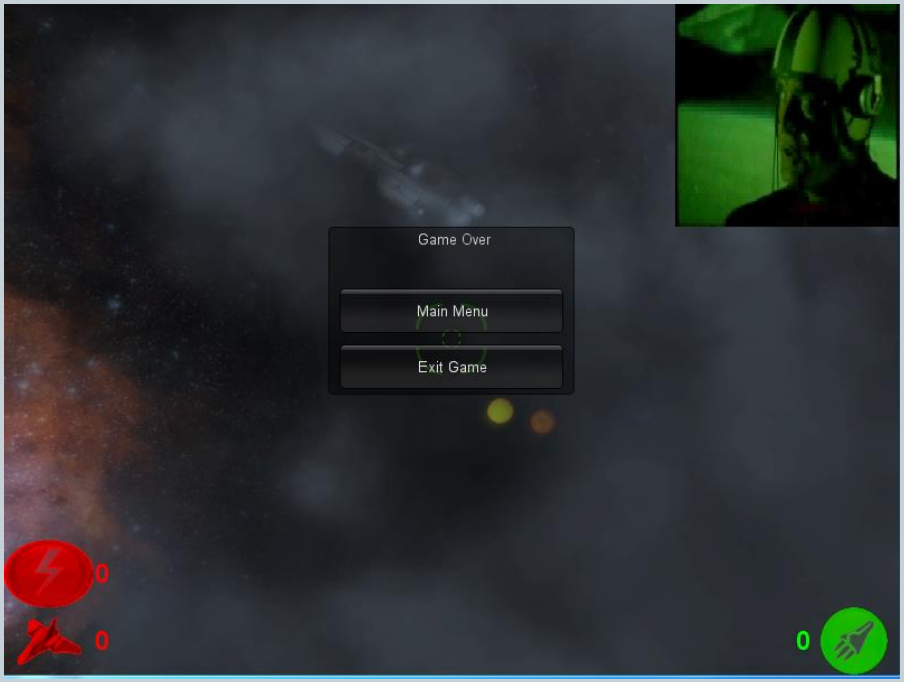


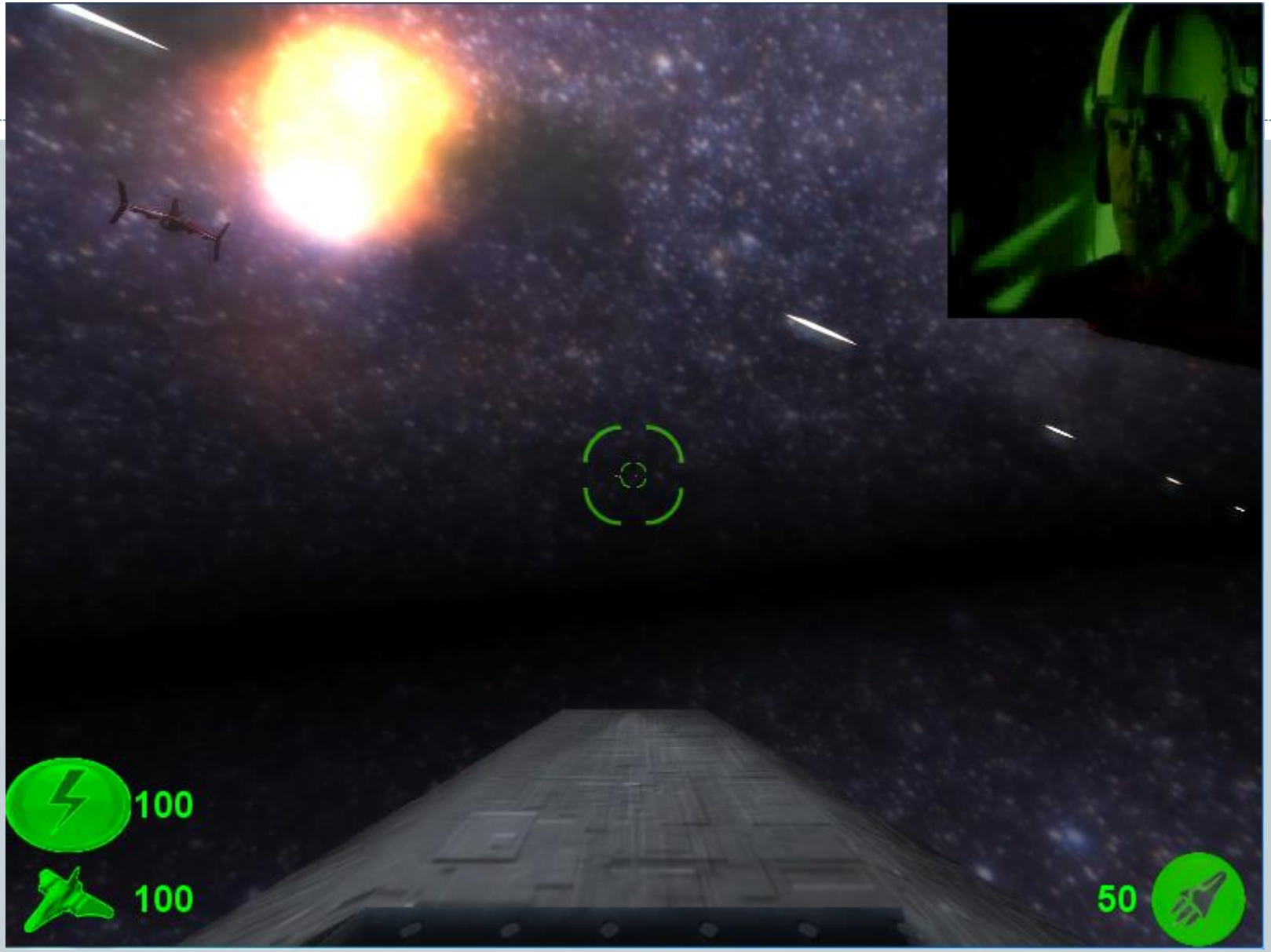
Artificial Intelligence

- Rock, Paper and Scissors Model
  - Battleships -> Cruisers
  - Cruisers -> Fighters
  - Fighters -> Bombers
  - Bombers -> Battleships
- Smart Turret Tracking
  - Grid Based Space Subdivision
    - Randomly picks closest targets
  - Aims w.r.t component priority
    - Shield Generators > Turrets = Engines > Comm. Antenna

User Interface

- GUI
  - Status Indicators
    - Armor, Shield, Speed
  - Crosshair
  - Comm. Channel
    - From Tayfun & Murat
  - Unity Menu Interface
    - (Pause Menu, Main Menu, etc.)
- Keyboard Interface
  - Ship Controls
    - Roll, Pitch, Yaw, Thrusters
  - Fire Controls
  - Camera Controls
    - Freelook

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