MAKER PORTFOLIO

Games and Simulations

Android Multiplayer Game

- Simple 2-player arcade-style game with minimalistic controls
- Each player must navigate a maze and try to shoot the opponent
- One joystick for motion and another to fire a laser pulse (both per player)
- All textures were designed in Substance, and the rest in Unity.

ML2 Wafer Manufacturing - Concept

- Simple mockup of a manufacturing turntable related to my father's work
- Each disk represents a silicon wafer that is printed on either side.
- The red docks represent print heads (which print on the wafer), while the blue docks represent rotation heads (which rotate the wafer).
- The timings (speeds of each machine) are entirely customizable after build (via an external text file).
- All textures were designed in Substance, and the rest in Unity.

Slipstream FPS - Concept

- Basic first-person shooter concept
- The drone moves by adding force toward the player position. This primitive motion control causes the elliptical tracks seen in game.
- All textures were designed in Substance, and the rest in Unity.

RTS Space Strategy Game (WIP)

- A real-time strategy game with 3rd person perspective (inspired by Spiral Drive from Nico Tuason).
- Each player must try to defeat the other player (at present by conquering all turrets, shipyards or supplies, and destroying all enemy ships)
    - TODO: Bugfix – especially the
    - TODO: add home base – which if captured, acts as an instant victory condition (like Capture the Flag)
    - TODO: procedurally generate levels, and add a level editor
- Shipyards: large rectangular models which generate ships.
- Supply: spherical models which represent supplies.
- Turrets: Glass octagonal prisms which fire lasers at enemy ships.
    - TODO: Enable firing – right now they are just buildings.
- Star: Colorful object in the center – gravitational pull destroys ships that wander too near.

- Ships: Military ships that automatically fire projectiles at nearby enemies. Each ship contains a defense system, which can only fire every # seconds.
    - TODO: control defense with a weighted pseudo-random probability for more dynamic gameplay
- All movement is physically realistic, with the exception of special relativity (classical physics-based realism). Both ships and projectiles move using PID based control algorithms.
    - TODO: Improve PID algorithms to remove random ship rotation bugs.
    - TODO: add gravity between ships as well, so paths are bent around both the star and other ships.
- All textures were designed in Substance, and the rest in Unity. Models were created in Blender.
- Includes an audio visualizer in the form of a solar flare.

Physical Systems (WIP)

- An educational game designed to familiarize students with physics (Classical Dynamics and Electricity and Magnetism).
- All movement is physically realistic, with the exception of special relativity (classical physics-based realism).
    - TODO – implement Magnetism (at the moment no magnetic fields are generated during charged particle motion)
- Everything was done in Unity.
- Levels:
    - Classical Dynamics (Orbits)
        - Gravity-Orbits
            - Gravity only affects Sun-planet interactions
        - Gravity-Orbital Dynamics
            - Now affects planet-planet as well
        - Gravity–Orbital Dynamics with Asteroidal Sun
            - Now Sun can move
        - Gravity-Orbital Dynamics Pair
            - Pair of planets orbiting around their common center of mass
    - E & M
        - Coupling-Oscillations
            - Pair of Hydrogen atoms interacting
                - TODO: add magnetism
        - Electric Potential
            - Harmonic Potential
                - Proton and electron encounter a harmonic potential
        - Scattering
            - TODO: add magnetism to all interactions
            - Mechanical (chargeless)
                - Idealistic
                - Realistic

- Rutherford Cross-Section (with charge)
  - Idealistic
    - Coulomb force only between Nucleus and α particles
  - Realistic
    - Now with realistic beam machinery and with Coulomb force between α particles
  - With Dipoles
    - Dipole
      - Nucleus is replaced with a rotating dipole
    - Dipole4Opp
      - Now with 4 dipoles, two stationary.
    - DipoleOpp
      - Now with a pair of dipoles rotating opposite each other

Architectural Visualization (Archviz)

Light Remodel – finished project

- Scale model
- Replaced the fluorescent lightbox with LED lights.
- Wiring was not included in the visualization.
- The workbench represents the dining table.
- Done entirely in Unity.
- Visualization was implemented by my father and I (albeit with his own modifications and not as accurately as preferred).

House Remodel (Add stairs for second story) – Concept

- Scale model (only stairway and immediate surroundings are to scale)
- Done in Unity with models from Blender.
- Was used to prove that the stairway need not traverse 3 walls of the room; that two flights of stairs would suffice.

House Remodel (Add Bathroom) – Concept

- Not to scale – artist visualization.
- Done entirely in Blender.
- Illustrated bathroom addition with optional knee-high wall.

Other Models

Sparrow (WIP)

- Futuristic cyberpunk airplane modeled after a sparrow.
    - TODO: add rigging and skin

Ocean Liner

- Futuristic cyberpunk ocean liner artpiece.

Bazooka

Rifle

UAV

- Military quadcopter equipped with bazookas and jet engines.

Several Art Models

MUSIC

I would appreciate it if you could take a look at my electronic productions, which can be found here: https://soundcloud.com/lightwaveofficial

My most recent work can be found here:
https://soundcloud.com/lightwaveofficial/sets/wips/s-ocAz9

Credits:

Video music by Sakuzyo.