SILANTRO HELICOPTER SIMULATOR

UPDATE LOG

v 3.5.02

ADDITIONS

- Added full autonomous control system with per-axis behaviors e.g. Attitude, Turn, Heading hold on the Lateral axis, Attitude and Speed hold on the longitudinal axis, Climb and Altitude hold on the power axis.
- Added a 3-axis stability augmentation system with leveler, rate limiter, and trim hold functionality. This will make the helicopters easier to control and stabilize.
- Added a fuselage analysis component with different models such as Flat plate, Blunt body or one of CH54/AH-1 custom lookup tables. This will compute the forces and moments generated by the fuselage based on its shape.
- Added a floating origin shift solution into the helicopter controller which can be turned on and off with ease.
- Added support for the new input system with samples and default configs for the;
  a. Airbus T320 stick
  b. Thrustmaster CHT yoke
  c. Thrustmaster HOTAS throttle
- Added a slight more performant "uniform inflow" analysis model for the rotors. This will be useful when a large number of helicopters need to be simulated in the same scene.

CHANGES

- The system is in its final form and things are where they need to be :) Namespaces for each system and notable components, combined/nested secondary components to reduce script count and complexity.
- The helicopter components are now updated (in addition to being initialized) from the controller component, this allows you to run the whole aircraft at custom frame rates, perform sub stepping (if you're crazy enough) and monitor the aircraft performance as a single "fixed update thread".

v 3.0.12

ADDITIONS

- Complete rewrite of the core flight model. The new system uses a full Blade element momentum theory analysis method, with improved controls and model accuracy.
- Added a low fidelity model for users interested in a more "Arcady" flight model. You can configure the model to use Only keyboard inputs or a combined mouse-keyboard control system.
- Merged the airfoil functionally with that of the fixed-wing system, so you can now use plots from both projects interchangeably.
- Added support for a surround engine sound system where the volume and the engine sound depend on the camera position relative to the aircraft centre.
- Added support for more flight instruments specifically MFD dials
- Added multi-edit functionality to the component editors

CHANGES

- The rotor can now be fully configured as a single component; the blade data will be calculated automatically based on the supplied variables
- Reduced operational scripts down even more with more combined functionality to reduce complexity, redundancy and save performance.
- The helicopter input collection and processing function has been moved to a dedicated Input class. This way everything about input and control of the aircraft is done in one location.
- The engine core (for each engine type) now derives from a custom Engine Core class, so the engines now have a common core class with a Thermodynamic extension for each type.
- The light system has been improved further and light bulbs can now be configured to work with Unity post-processing. The light flash curve offset and blink rate on each bulb can also be adjusted.

v 2.34

ADDITIONS

- Added a Flight Control System to handle input filtering and control and in future updates will provide full autonomous/assisted control.
- Improved the blade collision behavior, the helicopter is now more stable during collisions.
- Added Rollout Altimeter and Airspeed MFD displays,
- Fixed the particle system error in the engine components after compiler update. So, code can be updated while the simulation is running.
- Minor bug fixes

V 2.30 BETA

ADDITIONS

- Implementation of a proper power transmission system from the engines to the rotors
- Addition of a drag panel to model the full shape of the helicopter fuselage to improve the drag analysis.

CHANGES

FULL REWRITE OF THE CORE PHYSICS SYSTEM INCLUDING:

- Improvement of the blade and rotor system. The blade system now uses the effective coefficient system to properly analyses the thrust, torque coefficients over the blade panels.
- Improvement of the aerofoil system to balance out the forces on the helicopter rotors i.e the tail aerofoils now help the helicopter balance out in forward flight.
- Introduction of in-editor gizmos for the blades and aerofoils to make the setup process easier.

V 2.20

ADDITIONS

- Implementation of a "per-section" airfoil selection option. Now each individual section of an aerofoil can have its own shape/performance data.
    - Coming Soon: Introduction of airfoils with numerical flap data baked in for better performance and stall characteristics.
- Complete rewrite all power engines with full/realistic thermodynamic assumptions. Very crucial engine data (at several points) from the engines can now be collected and used e.g. stage or turbine pressure, EGT, mass flow rates etc.
- Addition of a Refuel and Resupply system for aircrafts i.e. Expended weapons can be resupplied at designated locations.

V 2.12

ADDITIONS

- Implementation of a realistic fuel and distribution system. The fuel tanks can now be placed in different parts of the aircraft and will have effect on the balance (COM position) of the aircraft
- Addition of a fuel selector system for the distributor. The distributor can be instructed to use fuel from the Auxilliary or Central Tanks. Or left in Automatic mode.

V 2.01

CHANGES

- Complete system rewrite from the ground up to fix major bugs and restructure the script communication system.
- Reduce operational scripts down from 53 to 37 usually with combined functionality to reduce complexity and save performance.
- Aircraft control sensitivity on the Roll, Pitch and Yaw axis can now be set within the controller script.
- Instrumentation and COG functions have been combined to save performance
- Missile, Rocket and Bullet components will now derive from a single "Munition" script to make setup easier and save performance
- Weapons manager component has been replaced with the "Armament" system which controls the stores and sends control information to the munition.
- Health and destruction system have been returned to a non-fused state to ease understanding and usage.
- Helicopters can now be started "Hot" with the engines running and at a set altitude/speed.

ADDITIONS

- Added new public functions to each script to ease calls and external control
- Smoother and easier foil setup with position and orientation selection.
- Added radar signature-based detection and sizing, also added a lock alert/indication on the base transponder.
    - Option to scale individual icon on the radar screen
    - RCS return now affects icon size
- Radar and camera views and added support to get list and properties of detected objects.
- Free camera mode and player view functionality.
- Added option for pure data processing on peripheral computer components or combined guidance functionality.
- Added direct fuel weight conversion based on selected unit on the fuel tank
- Added gun recoil functionality and support for rigidbody bullets.