

HOMEWORLD2

HOMEWORLD2 Attack Styles

Overview:

This document describes the behaviour of the coded attack styles and also the details of the tuning system for combat.

There are a number of attack styles available and they can be set for a ship in its tuning file in the attack ability section. The name used in the ship tuning is the name of a lua file in data\scripts\attack without the file extension. Each attack-tuning file specifies the base attack style type and data for that style. The valid attack style types are:

AttackRun	<p>Ships make attack runs on the target flying towards it until they are close then they break off and fly out till they are far enough away to start the run again.</p> <p>The tunables are:</p> <ul style="list-style-type: none">• maxBreakDistance – the maximum distance to fly away from the target.• distanceFromTargetToBreak – break off the attack run when this far from the target.• safeDistanceFromTargetToDoActions – when flying towards the target it is safe to do actions if we are not closer than this distance.• coordSysToUse – This defines the orientation of the break vector. TargetPoint means use the normal of the point on the target ship that we are currently firing at. Target means use the up vector of the target ship. Attacker means use the up vector of the attacking ships. <p>For the break vector the calculation is based on a unit vector forward with x and y values calculated from the following tunables</p> <ul style="list-style-type: none">• horizontalMin – the minimum x value.• horizontalMax – the maximum x value.• horizontalFlip – 1 means the x can be multiplied by –1, 0 means it is always between the specified min and max.• verticalMin – the minimum y value.• verticalMax – the maximum y value.• verticalFlip - 1 means the y can be multiplied by –1, 0 means it is always between the specified min and max. <p>Actions are checked every turn while the ships are flying towards the target and are not too close.</p>
JustShoot	<p>As soon as the attack command is given the ship will stop and try to fire at the target. No attempts will be made to move in to range</p>

	<p>or to orient the ship so it can fire. This should only be used for stationary ships like the turrets.</p> <p>Actions are checked every sim frame.</p>
MoveToTargetAndShoot	<p>Ships will move to in range of the target and to roughly the same height. They will not try to orient the ship to face the target. This is a good style for slow capital ships to use against fast moving targets.</p> <p>The tunables are:</p> <ul style="list-style-type: none"> • inRangeMultiplier – the ships will stop moving when the distance to the target is less than this multiplied by the ships max weapon range. • happilySameHeight – the ships will count as the same height as the target if the difference is less than this many metres. • TooLongOutOfRange – time in seconds that a target can be out of Range • tryToGetAboveTarget – should the ships try to maintain an angle relative to the target's up vector? • angleFromUp – the maximum allowed angle from the target's up vector (in degrees). <p>Actions are checked every sim frame that the attackers are in range.</p>
DogFight	<p>Ships will continuously try to fly at the target. The tunables and actions for this style are mainly to stop the ships endlessly spiraling and to give them a chance of hitting an opponent. This style is not good against slower targets.</p> <p>The tunables are:</p> <ul style="list-style-type: none"> • minSpeedFraction – ships will not go slower than this amount multiplied with their max speed. This stops them doing really tight spirals. <p>Actions are checked every sim frame.</p>
CircleStrafe	<p>Ships doing this style will circle the target while facing it. This doesn't look so good as the engine trails mess up.</p> <p>The tunables are:</p> <ul style="list-style-type: none"> • inRangeMultiplier – ships count as being in weapon range when they are closer than this multiplied by the max weapon range. This acts as an upper bound for the circle radius. • optimumRangeMultiplier – multiply this with the attacking ship's radius to get the desired circle radius. • rangeMultiplierForHeight – the circle has a height added on which can be up to this much multiplied with the radius. <p>Actions are not checked.</p>
FlyRound	<p>This style has the attackers flying in a circle round the target. The ships face the direction of flight. The circle is a series of points</p>

	<p>which are plotted as needed. The tunables allow you to control the circle. This style works best with slow moving targets.</p> <p>The tunables are:</p> <ul style="list-style-type: none"> • circleSegmentAngle – the angle between points on the circle, smaller angles mean a higher resolution circle. Too small and the ships may have problems hitting the goal. • angleVariation – the angle between points is multiplied by +/- this when working out the new point. • axisRotation – axis used for circling will be rotated by between -/+ this amount each step of the circle. • maxAxisRotation – the axis of the circle will never deviate more than this much from up. • distanceFromTarget – the radius of the circle. • distanceVariation – the actual radius is modified by this. • percentChanceOfCutting, minSegmentsToCut, maxSegmentsToCut – ships can skip points on the circle and fly to a new point, these variables describe this process. • circleHeight – an additional height for the circle points, lets you move the whole circle up and down. <p>Actions are checked at every point on the circle.</p>
FaceTarget	<p>Fly until in range of the target then turn so that the attackers face the enemy using the specified angle.</p> <p>Tunables:</p> <ul style="list-style-type: none"> • inRangeFactor – multiply this by the max weapon range to get the distance from the target to maintain. • tooSlowSpeed – if the target is moving less than this speed then it counts as stationary. • tooFastMultiplier – if the target is moving faster than this multiplied with the attacker's max speed then it is moving too quickly to be followed. • facingAngle – the attackers will use this angle to work out how to face the enemy. • tryToGetAboveTarget – should the ships try to maintain an angle relative to the target's up vector? • angleFromUp – the maximum allowed angle from the target's up vector (in degrees). • SlideDistanceMultiplier – multiplied by the range distance of the target. If above will fly to target without sliding. <p>Actions are checked every sim frame that the attackers are in range.</p>

Actions:

Attack style actions enable a degree of control over the execution of a style. The actions cover things like target switching and flight maneuvers. Each attack style tuning file can contain three action sections, 'BeingAttackedActions' which are triggered when a formation loses health, 'RandomActions' which are checked every so often, and 'FiringActions' which happen when a gun fires.

Each action has a priority and this defines how often it is called, the chance of an action being fired is it's priority over the sum of all the priorities in an action section.

The types of action are:

NoAction	Do nothing
PickNewTarget	Flush the current target and look for a new one, may be the same as the current.
FlightManeuver	Specifies a flight maneuver to perform.
InterpolateTarget	Only works for styles and ships which can handle it (BroadSide, Frontal and MoveToTargetAndShoot). Makes the ship move it's targeting point around on the target ship.