

## The Function of the AI System

The Historia enemies' AI system is broadly based on the idea that sightings of the player increase the suspicion value the enemy has for that given tile, and the total suspicion value the enemy has is the sum of all current tile's suspicion values, their 'Current Suspicions'. Depending on this sum total, the enemy will use one of four AI\_Behaviour systems. Each type of enemy, such as a bat or a goblin, uses a specific set of 4 defined behaviours, 1 for each level.

Level 0 suspicion uses an Oblivious\_Behaviour.

Level 1 suspicion uses an Unsettled\_Behaviour.

Level 2 suspicion uses a Suspicious\_Behaviour.

Level 3 suspicion uses an Alerted\_Behaviour.

Level 0 see enemies ignore any possible player presence and is their default behaviour, usually wandering around a room or patrolling from room to room with a pre-calculated set of waypoints. Levels 1 and 2 see differing responses, either again ignoring a player or stopping what they are doing to look around, and carry out a Search step. More on this later.

Level 3 sees the enemy address the player who is now seemingly very close to this enemy and has alerted the enemy to their presence. Usually this involved chasing down the player and attacking them, but could in the future involve running away or sounding an alarm to other enemies.

Parallel to this basic system is the idea of enemy confirmation. Any behaviour generates a set of next steps, a plan, for enemies to follow for the near future, and feeds the Enemy class one "plan step" at a time for it to complete, and then call DecideWhatToDo() which will give them the next one in normal circumstances, or instigate a Search step if the player "interrupts them" by being obvious to them, ie only a few tiles away and in Line of Sight (LOS) when deciding what to do next. In these Search steps and any other Search step given by a Behaviour normally as above, a short time passes while the enemy stands and waits – and if the player is still in LOS at the end of this time, the enemy "notices them" – ie calls the ConfirmPlayerLocation() method.

Confirming a player location automatically makes that tile the player occupies the MAX suspicion possible, adding enough points to take it immediately to it's Alert behaviour, as well as giving any behaviour the location confirmed as information to use if desired. An Enemy will stay in Alerted as long as the player has a confirmed location.

As long as the player stays in LOS, every update call to the behaviour updates the location of the enemy confirmation and updates tile suspicions to reflect this. If the player vanishes from LOS, the confirmed location is cancelled, seeing a currently Alerted enemy follow a system to guess where the player has gone. This is carried out through the method DissipateSuspicion and CancelConfirmedLocation() which take the suspicion value of that last confirmed location and spreading those points to nearby locations to that confirmed location, in places that are out of LOS of that enemy, weighted so these possible hiding places get more of the points the closer they are to the last confirmed location. The enemy will then usually takes the tile with the highest suspicion



value and instigates another Search step – which either re-finds the player, or dissipates the suspicion values again.

The player can get away from these situations since the actual suspicion values of every tile decays whenever the value was not bolstered with “new suspicion” in that update pass, following an exponential half-life decay curve. When there is no confirmed enemy and many tiles are left to be considered as less and less suspicious, the enemy will work down through decreasing levels of suspicion, eventually down again to oblivious.

