# AIA paper 1 – review guidance notes

## Abstractions

* Every 6 ticks is equivalent to 1 second. For meeting the 1 minute timer used in the real-world experiments.
* Each patch is the equivalent to 0.5cm. Determined from the exit width rules used in the real-world experiments.
* When an ant detects repellent, it retreats a patch, then checks for repellent before moving.
* The amount of pheromone left behind and the amount it spreads
* The amount of repellent dropped and the amount is spreads
* There is no restrictions on ants following their own pheromone trail.
* The actions of ants outside of the room has been abstracted. Where we have different scenarios as to what they do once they have left.
* Ants have no collision with other ants
* The dimensions of the room have been appropriately scaled to demonstrate expected behaviours.

## Preliminary results

### Rationale, collection, presentation

* Setup simulation and run.
* Point out graphs generated from the simulation.

### Use of behaviour space

* Point out the controlled experiments
* Point out the actual experiments (experiments in real-world reflected)

### How these underpin analysis

* The ants follow other ants out of the room in small groups, which resulted in data being produced that matched the research paper. However the current state of the model doesn’t simulate the behaviours we were expecting.

### Requirement for further development

* Ants colliding with other ants would ideally be implemented to reflect real-world environment.
* Refine Pheromone and Repellent spread behaviour.
* Restructure ant behaviour.
* Address the conflict between Pheromone and Repellent.
* Address ant navigation issues that, combined with the above conflict may be causing conditions where the model freezes.

## Identified behaviours

* Formation of multiple small groups occurred, although this behaviour wasn’t fully intended.
* Small spiralling occurs within groups briefly.
* Ants retreat from repellent and find a safer space, this safer space is not necessarily the exit, but a place with less repellent.

## Planned analysis

* Simulate further, the experiments carried out in the real-world experiments.
* Expand upon the experiments with changing variables. For example, disabling pheromones, room size, exit size and repellent position.
* Analyse the speed of which ants escape the room.
* The percentage of ants which escape the room before the experiment ends.

## Paper structure

* Abstract
* Intro/Background on the research paper
* Our work
  + Repellent spread
  + Room/Map setup
  + Ants code
  + Reporting code
* Results & Evaluation
  + Simulation of real-world experiments
  + Further Experiments
* Analysis & Conclusion
  + Compare simulation of original experiment to the research papers experiments
  + Conclusion

## Peer marks

* Dean 5
* Dan 4
* Jo 4