

Methods for the Efficient Deployment and Coordination of Swarm Robotic Systems

List of Corrections

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The following table summarises the corrections proposed to my thesis in response to the examiners and my supervisors suggestions. In this table we adopt the following notations and assumptions:

- ID stands for the number of a proposed correction.
- PJ, KS, NE shown between the two brackets refer to the examiners (Dr Peter Jancovic, Dr Konstantinos Sirlantzis) who have suggested the corrections, respectively. NE refers to Neil Eliot, the author.
- In the table of each correction, the first row shows a short description of the proposed correction according to the page number of the original thesis; the second row shows the action made for the correction according to the page number of the old thesis.

1.1 General Corrections

ID:(KS)	Short description of a proposed correction.
	Action taken to resolve proposed correction.
1:(KS)	Use of the word chaotic/chaos could be confusing.
	Renamed initial phase of the swarms development to 'disorganised' throughout.
2:(KS)	Context of chapter 3 could be moved to end of chapter 2 and the data analysis section moved to an appendix.
	Moved simulation implementation from chapter 3 into Chapter 2. Moved data aggregation component into a new appendix.
3:(PJ & KS)	Several references are showing journal/publication title followed by ' <i>Proceedings of</i> ' or ' <i>Transaction on</i> '. All titles need to be made consistent - 6, 7, 9, 10, 11, 12, 14, 15, 16, 18, 20, 24, 25, 28, 33, 37, 41, 47, 50, 52, 54, 55, 56, 58, 59, 61, 65, 67, 69, 71, 74, 76, 77, 78, 79, 82, 86, 90, 93, 94, 96, 98, 100, 113, 118, 126, 127, 130, 137, 139, 140, 141, 142, 146, 147, 150, 151, 152, 154, 155, 156, 157, 158, 161
	Bibtex data file updated by restructuring the title text.
4:(KS)	References require publication date - 21, 60, 70, 75, 92, 135
	Bibtex data file updated to include publication dates.
5:(KS)	References with no publisher - 27, 30, 36, 49, 60, 101, 108, 115, 132, 148, 149
	Bibtex data file updated to include publishers.

6:(KS)	Reference apostrophe missing from name - 115
	Bibtex data file updated.
7:(KS)	References with capitalised Author - 88, 149
	Bibtex data file updated.
8:(KS)	Reference requiring page numbers - 117
	Bibtex data file updated.
9:(PJ)	Citations in sections 2.1 and 2.7 need to be separate out to the relevant authors rather than a single list.
	References split out from Barnes and Bennet appropriately.
10:(PJ)	Formulae 2.1, 2.3, 2.4 4.2, 4.3, 4.4, 4.6, 4.7, 4.8 - Formula notation for cardinality needs to be reviewed.
	Cardinality notation changed to use $ \cdot $ for magnitude and $\ \cdot\ $ for cardinality in both formulae and inline equations e.g. $nbr(b) \triangleq \{b' \in S : \ bb'\ \leq C_b\}$ $R(b) = \{b' \in S : \ bb'\ \leq R_b\}$ $v_r(b) = -\frac{1}{ R(b) } \left(\sum_{b' \in R(b)} \left(1 - \frac{\ bb'\ }{R_b}\right) bb' \right)$ $\{o \in O : \ bo\ \leq O_b\}$
11:(PJ)	Several spelling errors of <i>stabalise</i> .
	Global replacement to <i>stabilise</i> .
12:(KS)	Several apostrophe errors on swarms
	Global check and replacement of references to swarm's where appropriate
13:(PJ)	Figs 6.4, 6.28, 6.29 needs to indicate starting point of simulation.
	Updated graphs by adding "Start Point" and arrows to graphs.

1.2 Specific Corrections

14:(KS)	Page (Abstract) Line 14 - Use of the term nodes needs to be made consistent with the rest of the thesis.
	Following abstract updates the section which mentions nodes is no longer present.
15:(KS)	Page 2 Line 24 - Explain <i>boid-based</i> .
	Page 2 Line 24 - Paragraph extended to include reference to seminal paper by Reynolds and comparison added to highlight similarity.

16:(KS)	Page 6 Line 21 - Typo - “fire service [111], as...”
	Page 6 Line 21 - Updated to “fire service [111] as...”
17:(KS)	Page 8 Line 30 - typo - anomalies ‘healing’
	Page 8 Line 30 - U pdated to “anomalies thus ‘healing’”
14:(KS)	Page 9 Line 6 - Reference to Hoff paper requires clarification.
	Page 9 Line 6 - Extended sentence to include message propagation reduction issue identified by Hoff.
19:(PJ)	Page 12 Line 9 - Description of the coordinates needs to be made clearer - <i>The coordinates of an agent...</i>
	Page 12 Line 9 - Re-worded section - <i>The position vector is given by the coordinates of an agent...</i> Also added back reference to appropriate section.
20:(KS)	Page 14 Line 5 - Explanation of vectors needs to be added as well as the back reference.
	Page 14 Line 5 - Paragraph extended to include vector description.
21:(PJ/KS)	Page 13 Line 15 - Typo error - <i>interction</i>
	<i>interaction</i>
22:(PJ)	Page 17 Line 4 - Reference error - <i>Figure 2.6 shows the...</i>
	<i>Equation 2.5 shows ...</i>
23:(KS)	Page 24 Line 21 - Referencing error - (Figures 2.10, 2.10, 2.11)...
	(Figures 2.10, 2.11, 2.12)...
24:(PJ)	Page 18 Line 12 - Sentence restructure required - <i>moves an obstacles...</i>
	<i>moves it may enter an obstacle’s...</i>
25:(PJ)	Page 21 Line 17 - Internal reference error.
	Latex block error corrected - <i>Equation 2.7</i> becomes <i>Equation 2.8</i> .
26:(PJ)	Page 71 Line 1 - (Static Swarm conclusion) There needs to be a mention of the current work and the usage of the distance metric.
	Added a discussion of current work (with references).
27:(PJ)	Page 19 Line 13 - Section 2.6 uses unexplained notation.
	The \wedge is explained in section 2.9. Explanation moved back to 2.6 for clarity.
28:(PJ)	Page 22 Line 7 - Section 2.9 uses inline formulae for movement.
	Equation broken out and referenced. Component parts of the equation discussed.

29:(PJ)	Page 26 - 39 - There needs to be consistency in capitalisation of Player/Stage
	Update all uses to <i>Player/Stage</i> (as used in other papers i.e. <i>Player/Stage simulation of olfactory experiments</i> and <i>The simulation scenario for swarm robots based on open-source software Player/Stage</i>).
30:(KS)	Page 41 Table 4.1 - Explain parameters for <i>Hexagonal Swarm</i>
	Modified labels and altered section to highlight that the parameters are arbitrary as they are only required to create a swarm to highlight the inter-agent relationships that exist. Any parameter combination will work so long as the cohesion potential field is greater than the repulsion potential field.
31:(PJ)	Page 42 - 45 - Table 4.2 - 4.5 Explain Labels <i>Log</i> , <i>Id</i> , <i>N.Id</i>
	Labels expanded in text with descriptions
32:(PJ)	Page 43 Line 6 - Error in text layout (<i>vectorTable 4.4...</i>)
	Sentence updated to <i>vector. Table 4.4...</i>
33:(PJ)	Page 45 Line 12 - Punctuation error “= 0) The ...”
	Updated document “= 0). The ...”
34:(PJ)	Page 46 - Figure 4.7 - Label error.
	Changed labels referring to <i>bot</i> to <i>agent</i>
35:(KS)	Page 48 Line 15 - Typographical error.
	“ <i>described is here.</i> ” changed to “ <i>described here.</i> ”
36:(PJ)	Page 53 Line 3 - Typo in introduction.
	changed “ <i>is a swarm.</i> ” to “ <i>in a swarm.</i> ”
37:(PJ)	Page 54 Table 5.1 - Explain parameter requirements
	Paragraph extended to include an explanation of the parameters and the type of swarm they create.
38:(NE)	Page 54 Table 5.1 - Labels in Weight component refer to neighbour and agent and should be inline with original concepts.
	Altered labels for field potentials to <i>Cohesion field</i> and <i>Repulsion field</i> .
39:(PJ)	Page 55 Figure 5.1 - Clarify graph mean
	Paragraph extended to explain the concept in the graph.
40:(PJ)	Page 61 Section 5.3.1 - There needs to be an explanation of what a bi-modal distribution presents
	Paragraph extended to explain the neighbour relationships that create the bi-modal effect when agents have extended visibility beyond the first neighbour.

41:(PJ)	Page 67 Line 2 - Punctuation error.
	“ <i>metric Figure 5.21...</i> ” amended to “ <i>metric. Figure 5.21</i> ”
42:(PJ)	Page 71 Line 2 - Expand and clarify <i>identical</i> .
	Description extended to explain the similarity in the graph profiles that are generated by the two metrics in a homogeneous swarm
43:(PJ)	Page 74 Line 5 - Punctuation error.
	“ <i>applied. Partial..</i> ” amended to “ <i>applied, partial...</i> ”
44:(PJ)	Page 79 Line 15 - Typographical error.
	“ <i>there</i> ” amended to “ <i>their</i> ”
45:(KS)	Page 95 Line 18 - Typographical error.
	“ <i>problem can is...</i> ” amended to “ <i>problem is...</i> ”
46:(KS)	Page 96 Line 18 - Typographical error.
	“ <i>algorithms selection...</i> ” amended to “ <i>algorithm’s selection...</i> ”
47:(PJ)	Page 99 Line 5 - Typographical error.
	“ <i>must are</i> ” amended to “ <i>are...</i> ”
48:(PJ)	Page 99 Line 8 - Typographical error.
	“ <i>its a goal...</i> ” amended to “ <i>towards it’s goal...</i> ”
49:(KS)	Page 102 Line 6 - Typographical error.
	“ <i>algorithm is produces...</i> ” amended to “ <i>algorithm produces...</i> ”
50:(KS)	Page 99 Line 17 - References are out of sequence
	“ <i>6.23, 6.25, 6.24 and 6.26...</i> ” amended to “ <i>6.23, 6.24, 6.25 and 6.26...</i> ”
51:(KS)	Page 106 Line 12 - Typographical error.
	“ <i>(Figure 6.30)</i> ” amended to “ <i>Figure 6.30</i> ”
52:(PJ)	Page 109 Figure 6.31 - Error in title description
	“ <i>speed</i> ” amended to “ <i>path</i> ”
53:(PJ)	Refer to tables by reference not as <i>above</i> .
	Added references “ <i>6.8, 6.9 and 6.10</i> ”
54:(PJ)	Page 119 Figure 6.42 - Increase font size of agent labels (n_{1-7})
	Font increased
55:(PJ)	Page 120 - Conclusion section missing.
	Added conclusion to chapter.
56:(PJ)	Page 121 Line 10 - Sentence duplicates explanation.
	Sentence removed - <i>Depending upon...</i>

57:(PJ)	Page 126 Line 3 - Explanation needs to be expanded as to what circumstances concave reduction effects a swarm.
	<i>“In some circumstances...”</i> amended to include an explanation of the effect.
58:(PJ)	Page 130 Line 22 - Error in table reference.
	<i>“Table 8.4...”</i> amended to <i>“Table 7.1”</i> - Error caused by latex label not in block.
59:(PJ)	Page 135/136 Figures 7.12 and 7.13 - Title clarification required.
	<i>Baseline/Concave path effect</i> amended to <i>Baseline/- Concave path effect (after 600 iterations / 60s)</i>
60:(PJ)	Pages 138, 139, 140 and 141 Figures 7.14, 7.15, 7.16, 7.18 and 7.19 - Title needs to have clarification of the bracketed numbers
	<i>“(80/60)”</i> amended to <i>“(cohesion field 80 / repulsion field 60)”</i>
61:(PJ)	Page 141 Table 7.3 - Location of Table 7.3 needs to be closer to Figure 7.19
	Moved to below 7.16 and referenced.
62:(PJ)	Page 143 Line 1 - Incorrect internal reference.
	<i>“Figure 7.32”</i> amended to <i>“Figure 7.21”</i> - Incorrect latex label Corrected
63:(PJ)	Page 143 Line 7 - Typographical error.
	section 7(6).4 <i>“seem”</i> amended to <i>“seen”</i>
64:(PJ)	Pages 159, 160 Figures 7.38, 7.39 - Clarify <i>60 Obstacle</i>
	Figure titles expanded to clarification repulsion field 60 units for obstacles.
65:(PJ)	Page 167 line 3 - Typographical error.
	<i>“rseultant”</i> amended to <i>“resultant”</i>
66:(PJ)	Page 168 Line 7 - Typographical error.
	<i>“space. each...”</i> amended to <i>“space. Each...”</i>
67:(PJ)	Page 169 line 1 - Typographical error.
	<i>“seconds. between...”</i> amended to <i>“seconds. Between...”</i>
68:(PJ)	Page 169 line 2 - Spelling error.
	<i>feild</i> amended to <i>field</i>
69:(PJ)	Page 186 Line 32 - Sentence requires restructuring.
	Restructured sentence <i>swarm that utilises... to uses both...</i>
70:(PJ)	Page 30 line 13 - Spelling error.
	<i>“thier”</i> amended to <i>“their”</i>

71:(PJ)	Page 173 line 15 - Spelling error.
	“ <i>thier</i> ” amended to “ <i>their</i> ”
72:(PJ)	Page 176 line 7 - Spelling error.
	“ <i>disturbance</i> ” amended to “ <i>disturbance</i> ”
73:(NE)	Page 46 Equation 4.4 - Formula error.
	“ <i>b</i> ” amended to “ <i>b</i> ”