

Methods for the Efficient Deployment and Coordination of Swarm Robotic Systems

List of Corrections

Neil Eliot

June
2017

List of Corrections

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 shown between the two brackets refer to the examiners (Dr Peter Jancovic. and Dr Konstantinos Sirlantzis) who have suggested the correction, respectively.
- 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 relevent authors rather than a single list
	References split out from Barnes and Bennet appropriately

1.2 Specific Corrections

10:(KS)	Page (Abstract) Line 14 - Use of the term nodes needs to be made consistent with the rest of the thesis
	Changed to agents for consistency
11:(KS)	Page 2 Line 24 - Explain <i>boid-based</i>
	Paragraph extended to include reference to seminal paper by Reynolds and comparison added to highlight similarity.
12:(KS)	Page 6 Line 21 - Typo - fire service [111], as
	updated to “fire service [111] as”
13:(KS)	Page 8 Line 30 - typo - anomalies ‘healing’
	updated to “anomalies thus ‘healing’”
14:(KS)	Page 9 Line 6 - Reference to Hoff paper requires clarification
	extended sentence to include message propogation reduction issue identified by Hoff
15:(PJ)	Page 12 Line 9 - Description of the coordinates needs to be made clearer - <i>The coordinates of an agent...</i>
	Re-worded section - <i>The position vector is given by the coordinates of an agent...</i>
16:(KS)	Page 14 Line 5- explanation of vectors needs to be added as well as the back reference
	paragraph extended to include vector description
17:(PJ/KS)	Page 13 Line 15 - Typo error - <i>interction</i>
	<i>interaction</i>
(PJ)	Page 17 Line 4 - Reference error - <i>Figure 2.6 shows the...</i>
	<i>Equation 2.5 shows ...</i>

(KS)	Page 24 Line 21 - Referencing error - (Figures 2.10, 2.10, 2.11)..
	(Figures 2.10, 2.11, 2.12)..
(PJ) Formulae 2.1, 2.3, 2.4 - Formula notation	Cardinality notation changed to use $. $
	$nbr(b) \triangleq \{b' \in S : bb' \leq C_b\}$ $R(b) = \{b' \in S : bb' \leq R_b\}$ $v_r(b) = - \frac{1}{ R(b) } \left(\sum_{b' \in R(b)} \left(1 - \frac{ bb' }{R_b}\right) bb' \right)$ $\{o \in O : bo \leq O_b\}$
(PJ) Section 2.6 - Sentence re-structure	moves an obstacles
	moves it may enter an obstacle's
(PJ) Section 2.8 - Special case reference error	Special case of Equation 2.7
	Special case of Equation 2.8
(PJ) Spelling	Section 2.11
	amp Figure 2.12 Stabalise
	Stabilise
(PJ) Expand Conclusion	No mention of current work
	Added small discussion of current work
(PJ) Explain ^	Section 2.6 uses unexplained notation
	Moved ^ explanation from section 2.9 to 2.6
(PJ) No equation	Section 2.9 uses inline formulae for movement.
	Equation broken out and referenced.

1.3 Simulator

(PJ) Consistency in capitalisation	Player/Stage
	player/stage

1.4 Magnitude Metric

(KS) Table 4.1 → 3.1 Explain parameters	Hexagonal
	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.
(KS) Typos	swarms
	swarm's
(PJ) Table 4.2 → 3.2 Explain Labels	Log, Id, N.Id
	Labels expanded in text
(PJ) Section 4.2 → 3.2 Sentence error	vectorTable 4.4
	vector. Table 4.4
(PJ) Section 4.3 → 3.3 Punctuation	= 0) The
	= 0). The
(PJ) Diagram 4.7 → 3.7 Label error	bot
	agent
(KS) Equations 4(3).2, 4(3).3, 4(3).4, 4(3).6, 4(3).7, 4(3).8 and inline equations cardinality notation changed	.
	. for magnitude. . for cardinality
(KS) Section 4.6 Typo	described is here
	described here

1.5 Swarm Type

(PJ) Typo in introduction	is a swarm
	in a swarm
(PJ) Parameter explanation, Table 5.1 → 4.1	Explain parameter requirements
	Paragraph added

(NE) Table labels in 5.1 → 4.1	Neighbour and agent altered
	Cohesion field, Repulsion field
(PJ) Section 5.2.1 → 4.2.1	Clarify graph mean
	Paragraph extended
(PJ) Section 5.3.1 → 4.3.1	Clarify bi-modal
	Paragraph extended
(PJ) Section 5.4 → 4.4 Comment	Isn't Sect 5.4 a repetition
	Section is a comparison to highlight that the new metric could be used as a replacement for the distance metric and provide additional status information
(PJ) Section 5.4 → 4.4 Punctuation	metric Figure 5.21
	metric. Figure 5.21
(PJ) Section 5.5 → 4.5 Expand	identical?
	description extended

1.6 Perimeter Coordination

(PJ) Typo in introduction	applied. Partial
	applied, partial
(PJ) Fig 6(5).4 6(5).28, 6(5).29	Needs to indicate starting point
	Added "Start Point" and arrows to graphs
(PJ) Section 6(5).2 Typo	there
	their
(ks) Section 6(5).7.1.1 Typo	problem can is
	problem is
(KS) Section 6(5).7.2 Typo	algorithms selection
	algorithm's selection
(PJ) Section 6(5).8 Typo	must are
	are
(PJ) Section 6(5).8 Typo	its a goal
	towards it's goal
(KS) Section 6(5).8.1 Typo	algorithm is produces
	algorithm produces

(KS) Section 6(5).8.1 Se- quence of refs	6.23, 6.25, 6.24 and 6.26
	6.23, 6.24, 6.25 and 6.26
(KS) Section 6(5).8.3 Typo	(Figure 6.30)
	Figure 6(5).30
(PJ) Figure 6(5).31 Title change	speed
	path
(PJ) Section 6(5).9 Reference	tables above
	Tables 6.8, 6.9 and 6.10
(PJ) Figure 6(5).42 Font	n_{1-7}
	Font increased
(PJ) Missing Section	Conclusion section missing
	Added conclusion

1.7 Concave Reduction

(PJ) Introduc- tion sentence duplicates ex- planation	Depending upon
	Sentence removed
(PJ) Expand ex- planation	In some circumstances ...
	Circumstance explained
(PJ) Table Ref- erence	Table 8.4 ...
	Table 7.1 (Error in latex label corrected)
(PJ) Figure title clarification Fig 7(6).12, 7(6).13	Baseline/Concave path effect
	Baseline/Concave path effect (after 600 iterations / 60s)
(PJ) Figure title clarification Fig 7(6).16, 7(6).18, 7(6).19	(80/60)
	(cohesion field 80 / repulsion field 60)
(PJ) Table 7.3 Location	Located below Figure 7(6).19
	Moved to below 7(6).16 and referenced.

(PJ) Page 143? Figure reference 7.32	Incorrect latex reference
	Corrected
(PJ) Typo section 7(6).4	seem
	seen
(PJ) Figure title clarification 7(6).38, 7(6).39	60 Obstacle
	repulsion field 60 units for obstacle

1.8 Flood Filling

(PJ) Section 8.1.1 Typo	rseultant
	resultant
(PJ) Section 8.1.2 Typo	space. each
	space. Each
(PJ) Section 8.1.2 Typo	seconds. between
	seconds. Between
(PJ) Section 8.1.2 Typo	feild
	field
(PJ) Section 8.1.3 Sentence restructure	uses a swarm that utilises
	uses both
(PJ) Section 8.2 Typo	thier
	their
(PJ) Section 8.2.1 Typo	stabalises
	stabilises
(PJ) Section 8.2.1 Typo	distrurbances
	disturbances

1.9 Future Work