

Dt: 25.10.2021

Summary - Review reports for MS thesis by Siddharth Bhat M

Comments by Examiner 1: Dr. Soma Paul

Suitable for MS

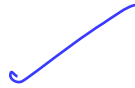
Comments by Examiner 2: Dr. Makarand Tapaswi

Suitable for MS (Suggested some minor changes)

Guide : Dr. Srinathan Kannan

Recommendation from Dean (R&D):

Proceed:



* Incorporate the suggestion

Resubmit:

Others:


Dean R&D



MS Thesis Evaluation Form
IIT Hyderabad

Dt : 17.08.2021

Thesis Title: Mathematical Structures for Word Embeddings

Name of the Student: Siddharth Bhat M (20161105), MS (Dual) in ECE

Main contributions: (List 3-4 points)

The thesis attempts to use ideas from abstract interpretation to propose a schema to extract Montague semantics from Word2Vec.

Nature of contribution: Is the thesis theoretical? Experimental? Circle all applicable ones

<input checked="" type="radio"/> Mostly Theoretical	<input type="radio"/> Partially Theoretical	<input type="radio"/> Mostly Experimental	<input type="radio"/> Partially Experimental	<input type="radio"/> System Building	<input type="radio"/> Other (Elaborate)
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Rate the thesis on a scale of 1 (least) to 5 (best) by circling. Feel free to expand any point separately

Originality of the contributions:	1	2	3	<input checked="" type="radio"/> 4	5
Thesis: Quality of writing:	1	2	3	<input checked="" type="radio"/> 4	5
Thesis: technical organization:	1	2	3	<input checked="" type="radio"/> 4	5
Survey of literature:	1	2	<input checked="" type="radio"/> 3	4	5
Validation of the ideas:	1	<input checked="" type="radio"/> 2	3	4	5
Utility/Impact of the work:	1	2	<input checked="" type="radio"/> 3	4	5

Overall Evaluation: Circle your view of the thesis' suitability for awarding an MS degree

<input type="radio"/> Exceeds Expectations	<input checked="" type="radio"/> Suitable for MS	<input type="radio"/> May Accept	<input type="radio"/> Doubtful for MS	<input type="radio"/> Unsuitable for MS
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Comments to the PG Committee: Give any other comment you may have in this connection.

Date:

Soma Paul
Signature of the Evaluator
Dr. Soma Paul

Please fill this form and submit to the office within 4 weeks of receipt of the thesis

Some comments:

- 1. Section 4.4 is missing*
- 2. Some references are missing (p33)*



**MS Thesis Evaluation Form
IIIT Hyderabad**

Dt : 14.07.2021

Thesis Title: Mathematical Structures for Word Embeddings

Name of the Student: Siddharth Bhat M (20161105), MS (Dual) in ECE

Main contributions: (List 3-4 points)

- A good deep dive into the codebase of word2vec. Especially as the actual code is quite different from the common perception of the learning algorithm (e.g., different vectors for positives and negatives)
- Two interpretations of word embeddings: (i) based on Montague semantics that is predicated on mathematical logic, and (ii) a geometric interpretation that imposes that word vectors form a Lie group and have all properties (log / exp / dot-product) as that of a Riemannian manifold. These interpretations are not evaluated experimentally.
- Fuzzy set representation of word vectors – perhaps the strongest contribution of this work. Leads to a probabilistic interpretation of dimension, and corresponding set-based definitions of union, intersection, difference, etc. facilitating the same vector algebra experiments as were done in the original word embedding work. Proposed approach improves performance on several tasks such as similarity and analogy, functional word detection. Good qualitative and quantitative analysis.

There are some crucial typos or unclear points in the work which are highlighted in the attached pdf. Request that Siddharth please fix the minor comments at least, as they drastically change the meaning.

Nature of contribution: Is the thesis theoretical? Experimental? Circle all applicable ones

Mostly
Theoretical

Partially
Theoretical

Mostly
Experimental

Partially
Experimental

System
Building

Other
(Elaborate)

Rate the thesis on a scale of 1 (least) to 5 (best) by circling. Feel free to expand any point separately

Originality of the contributions:

1 2 3 4 5

Thesis: Quality of writing:

1 2 3 4 5

Thesis: technical organization:

1 2 3 4 5

Survey of literature:

1 2 3 4 5

Validation of the ideas:

1 2 3 4 5

Utility/Impact of the work:

1 2 3 4 5

Overall Evaluation: Circle your view of the thesis' suitability for awarding an MS degree

Exceeds
Expectations

Suitable
for MS

May
Accept

Doubtful
for MS

Unsuitable
for MS

Comments to the PG Committee: Give any other comment you may have in this connection.

None



Date: 25 August 2021

Signature of the Evaluator
Dr. Makarand Tapaswi

Please fill this form and submit to the office within 4 **weeks** of receipt of the thesis

