

# Roy Schwartz, Curriculum Vitae, May 2020

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Contact Information	Allen institute for Artificial intelligence 2157 N Northlake Way Suite 110, Seattle, WA 98103	<a href="https://roys174.github.io/">https://roys174.github.io/</a> <a href="mailto:roys@allenai.org">roys@allenai.org</a>
Academic Positions	Assistant Professor, Hebrew University of Jerusalem Research Scientist, Allen Institute for Artificial Intelligence Postdoctoral Scholar, University of Washington Host: Prof. Noah A. Smith Postdoctoral Scholar, Allen Institute for Artificial Intelligence	2020– 2019–2020 2016–2020  2016–2019
Education	The Hebrew University of Jerusalem Ph.D., School of Computer Science and Engineering Advisor: Prof. Ari Rappoport Thesis title: “Pattern-Based Methods for Improved Lexical Semantics and Word Embeddings”  The Hebrew University of Jerusalem M.Sc. <b>magna cum laude</b> in Computer Science Advisor: Prof. Ari Rappoport Final M.Sc. grade: 97.4/100  The Hebrew University of Jerusalem B.Sc. <b>magna cum laude</b> in Computer Science and Cognitive Science Member of the Amirim program for outstanding undergraduate students of sciences Course average: 96.1/100	2011–2016       2009–2011       2005–2008
Awards and Scholarships		
PAPER AWARDS	<b>Best paper award</b> ; Workshop on Representation Learning for NLP (RepL4NLP) Best performing system; Workshop on Linking Models of Lexical, Sentential and Discourse-Level Semantics (LSDSem) shared task	2018 2017
GRANTS	NVIDIA’s GPU grant University of Washington Computer Science postdoc research award Pascal travel grant	2017, 2018 2017 2011, 2012
STUDENT AWARDS	Hoffman leadership and responsibility program for <b>outstanding Ph.D. students</b> Liss foundation award for outstanding Ph.D. students Leibniz award for <b>excellent M.Sc. students</b> in Computer Science Faculty of Science prize for excellent M.Sc. students based on academic achievements School of Computer Science scholarship for outstanding M.Sc. students <b>Dean prize</b> for academic achievements	2011–2014 2013 2011 2010, 2011 2010 2006
OUTSTANDING REVIEWER	North American Chapter of the Association of Computational Linguistics (NAACL) Annual Meeting of the Association of Computational Linguistics (ACL)	2018 2014, 2015, 2017
TEACHING AWARDS	<b>Ranked first</b> in the School of Computer Science student evaluation survey Faculty of Science excellent teachers list based on student evaluation	2012 2010

## Journal Articles

- [1] **R. Schwartz**, D. Dodge, N. A. Smith and O. Etzioni. *Green AI*. To Appear in Communications of the ACM (CACM 2020).

## Refereed Conference Publications

*Note: Conferences are the main publication forum in Natural Language Processing. The leading conferences of the field (e.g., ACL, NAACL, EMNLP, CoNLL and COLING) are highly competitive with acceptance rates typically no higher than 25%. All papers below were peer-reviewed.*

## LONG PAPERS

- [2] **R. Schwartz**, G. Stanovsky, S. Swayamdipta, J. Dodge, and N. A. Smith, *The Right Tool for the Job: Matching Model and Instance Complexities*. Annual Meeting of the Association of Computational Linguistics (ACL 2020).
- [3] H. Peng, **R. Schwartz**, D. Li, and N. A. Smith, *A Mixture of  $h-1$  Heads is Better than  $h$  Heads*. Annual Meeting of the Association of Computational Linguistics (ACL 2020).
- [4] W. Merrill, G. Weiss, Y. Goldberg, **R. Schwartz**, N. A. Smith, and E. Yahav, *A Formal Hierarchy of RNN Architectures*. Annual Meeting of the Association of Computational Linguistics (ACL 2020).
- [5] J. Dodge, S. Gururangan, D. Card, **R. Schwartz** and N. A. Smith, *Show Your Work: Improved Reporting of Experimental Results*. Conference on Empirical Methods in Natural Language Processing (EMNLP 2019).
- [6] M. E. Peters, M. Neumann, R. Logan, **R. Schwartz**, V. Joshi, S. Singh and N. A. Smith, *Knowledge Enhanced Contextual Word Representations*. Conference on Empirical Methods in Natural Language Processing (EMNLP 2019).
- [7] H. Peng, **R. Schwartz**, S. Thomson and N. A. Smith, *Rational Recurrences*. Conference on Empirical Methods in Natural Language Processing (EMNLP 2018).
- [8] R. Zellers, Y. Bisk, **R. Schwartz** and Y. Choi, *SWAG: A Large-Scale Adversarial Dataset for Grounded Commonsense Inference*. Conference on Empirical Methods in Natural Language Processing (EMNLP 2018).
- [9] **R. Schwartz**, S. Thomson and N. A. Smith, *SoPa: Bridging CNNs, RNNs, and Weighted Finite-State Machines*. Annual Meeting of the Association of Computational Linguistics (ACL 2018).
- [10] D. Kang, W. Ammar, B. Dalvi, M. van Zuylen, S. Kohlmeier, E. Hovy and **R. Schwartz**, *A Dataset of Peer Reviews (PeerRead): Collection, Insights and NLP Applications*. North American Chapter of the Association of Computational Linguistics (NAACL 2018).
- [11] **R. Schwartz**, M. Sap, Y. Konstas, L. Zilles, Y. Choi and N. A. Smith, *The Effect of Different Writing Tasks on Linguistic Style: A Case Study of the ROC Story Cloze Task*. Conference on Natural Language Learning (CoNLL 2017).
- [12] I. Vulić, **R. Schwartz**, R. Reichart, A. Rappoport and A. Korhonen, *Automatic Selection of Context Configurations for Improved (and Fast) Class-Specific Word Representations*. Conference on Natural Language Learning (CoNLL 2017).
- [13] **R. Schwartz**, R. Reichart and A. Rappoport, *Symmetric Pattern Based Word Embeddings for Improved Word Similarity Prediction*. Conference on Natural Language Learning (CoNLL 2015).
- [14] **R. Schwartz**, R. Reichart and A. Rappoport, *Minimally Supervised Classification to Semantic Categories Using Automatically Acquired Symmetric Patterns*. International Conference on Computational Linguistics (COLING 2014).
- [15] **R. Schwartz**, O. Tsur, A. Rappoport and M. Koppel, *Authorship Attribution of Micro-Messages*. Conference on Empirical Methods in Natural Language Processing (EMNLP 2013).
- [16] **R. Schwartz**, O. Abend and A. Rappoport, *Learnability-Based Syntactic Annotation Design*. International Conference on Computational Linguistics (COLING 2012).

- [17] **R. Schwartz**, O. Abend, R. Reichart and A. Rappoport, *Neutralizing Linguistically Problematic Annotations in Unsupervised Dependency Parsing Evaluation*. Annual Meeting of the Association of Computational Linguistics (ACL 2011).
- [18] J. Dodge, **R. Schwartz**, H. Peng and N. A. Smith, *RNN Architecture Learning with Sparse Regularization*. Conference on Empirical Methods in Natural Language Processing (EMNLP 2019).
- [19] H. Peng, **R. Schwartz** and N. A. Smith, *PaLM: A Hybrid Parser and Language Model*. Conference on Empirical Methods in Natural Language Processing (EMNLP 2019).
- [20] N. Liu, **R. Schwartz** and N. A. Smith, *Inoculation by Fine-Tuning: A Method for Analyzing Challenge Datasets*. North American Chapter of the Association of Computational Linguistics (NAACL 2019).
- [21] S. Gururangan, S. Swayamdipta, O. Levy, **R. Schwartz**, S. Bowman and N. A. Smith, *Annotation Artifacts in Natural Language Inference Data*. North American Chapter of the Association of Computational Linguistics (NAACL 2018).
- [22] **R. Schwartz**, R. Reichart and A. Rappoport, *Symmetric Patterns and Coordinations: Fast and Enhanced Representations of Verbs and Adjectives*. North American Chapter of the Association of Computational Linguistics (NAACL 2016).
- [23] D. Rubinstein, E. Levi, **R. Schwartz** and A. Rappoport, *How Well Do Distributional Models Capture Different Types of Semantic Knowledge?* Annual Meeting of the Association of Computational Linguistics (ACL 2015).

#### WORKSHOP PAPERS

- [24] **R. Schwartz**, M. Sap, Y. Konstas, L. Zilles, Y. Choi and N. A. Smith, *Story Cloze Task: UW NLP System*. Workshop on Linking Models of Lexical, Sentential and Discourse-Level Semantics (LSDSem 2017). **Best performing system**.
- [25] N. F. Liu, O. Levy, **R. Schwartz**, C. Tan and N. A. Smith, *LSTMs Exploit Linguistic Attributes of Data*. Workshop on Representation Learning for NLP (RepL4NLP 2018). **Best paper award**.

#### Papers under Review

- [26] J. Dodge, G. Ilharco, **R. Schwartz**, A. Farhadi, H. Hajishirzi and N. A. Smith, *Fine-Tuning Pretrained Language Models: Weight Initializations, Data Orders, and Early Stopping*.
- [27] J. Acs, **R. Schwartz**, N. A. Smith, and A. Kornai, *How Well Does Multilingual BERT Know Morphology?*

#### Invited Talks

##### Green AI

Microsoft, Machine Learning Seminar 04/2020

##### Green NLP

Berkeley, Natural Language Processing Group Seminar 03/2020

Stanford, Natural Language Processing Group Seminar 03/2020

Google Brain, Natural Language Processing Group Seminar 03/2020

##### Towards Interpretable Deep Learning for Natural Language Processing

Technion, Computer Science, Electrical Engineering, and Industrial Engineering Colloquia 12/2018

Tel Aviv University, Computer Science and Electrical Engineering Colloquia 12/2018

The Hebrew University, Computer Science Colloquium 12/2018

Weizmann Institute, Machine Learning Seminar 12/2018

##### Teaching Machine how to Read

Invited Poster, Computing Community Consortium Early Career Researcher Symposium 08/2018

<b>Inductive Bias of Deep Networks through Language Patterns</b> Google Research Tel-Aviv, Machine Learning Seminar	12/2017
<b>Pattern-Based Solutions to Limitations of Leading Word Embeddings</b> University of Pennsylvania, Natural Language Processing Group Seminar Johns Hopkins University, Natural Language Processing Group Seminar University of Washington, Natural Language Processing Group Seminar	02/2016 02/2016 02/2016
<b>Automatic Extraction of Semantic Relations from Large Bodies of Text</b> Tel Aviv University, Cognitive Neuroscience Group Seminar	12/2015
<b>Word Similarity via Symmetric Patterns</b> IBM Research Tel Aviv, Machine Learning and Data Mining Group Seminar	09/2015
<b>Semantic Knowledge Acquisition Using Frequency Based Patterns</b> Catalonia-Israel Symposium on Lexical Semantics and Grammatical Structure	02/2015
<b>Acquiring Semantic Knowledge Using Patterns</b> Hebrew University, CS Learning Seminar	12/2014
<b>Identifying Authorships of Very Short Texts Using Flexible Patterns</b> Intel Inc. Haifa, ICRI-CI Retreat	05/2014
<b>Semantic Representation Using Flexible Patterns</b> Berkeley, Natural Language Processing Group Seminar Stanford, Natural Language Processing Group Seminar USC Information Sciences Institute, Natural Language Processing Group Seminar Twitter Inc., Technological Talk Intel Inc. Santa Clara, Natural Language Processing Group Seminar IBM Research Tel Aviv, Machine Learning and Data Mining Group Seminar	10/2013 10/2013 10/2013 10/2013 10/2013 10/2013

## Professional Activities

AREA CHAIR	ACL; Textual Inference and Other Areas of Semantics	2019, 2020
CONFERENCE PROGRAM COMMITTEE MEMBER	International Conference on Machine Learning (ICML) International Conference on Learning Representations (ICLR) Annual Meeting of the Association of Computational Linguistics (ACL) North American Chapter of the Association of Computational Linguistics (NAACL) Conference on Empirical Methods in Natural Language Processing (EMNLP) Neural Information Processing Systems (NeurIPS) Conference on Artificial Intelligence (AAAI) Conference on Natural Language Learning (CoNLL) Joint Conference on Lexical and Computational Semantics (*SEM) European Chapter of the Association of Computational Linguistics (EACL)	2019–2020 2019–2020 2013–2018 2016–2019 2013, 2015–2019 2018–2019 2018 2016–2018 2018 2017
JOURNAL REVIEWER	Transactions of the Association for Computational Linguistics (TACL) Journal of Machine Learning Research (JMLR) Patterns PLOS Computational Biology Journal of Artificial Intelligence Research (JAIR) Computational Linguistics (CL) Natural Language Engineering (NLE) Algorithms	2019–2020 2020 2020 2020 2017–2018 2018 2017 2017

ACL Student Research Workshop	2020
Linking Models of Lexical, Sentential and Discourse-level Semantics (LSDSem)	2017
Workshop on Evaluating Vector Space Representations for NLP (RepEval)	2016–2017
NAACL-HLT Student Research Workshop	2016
Joint Workshop on Social Dynamics and Personal Attributes in Social Media	2014

## Teaching

<b>Lecturer</b> , Object Oriented Programming; <b>Israeli Council of Higher Education Program for Online Digital Learning</b> Primary instructor of one the core CS courses to be part of the Israeli online digital learning platform, designed to <b>enhance and replace frontal lectures in all Israeli universities</b> , as well as provide CS training to non-university students. Designing the course, building and recording online lectures.	2018–2020
<b>Invited lecture</b> , University of Washington School of Computer Science and Engineering master’s Natural Language Processing course (CSEP 517).	2017
<b>Lecturer</b> , Object Oriented Programming on HUJI-Coursera Primary instructor of the <b>first ever online course</b> at the School of Computer Science and Engineering at the Hebrew University. Designing, building and recording online lectures for the main undergraduate programming course, given yearly to <b>300–500</b> undergraduate students.	2014–2016
<b>Lecturer</b> , Object Oriented Programming, Hebrew University Primary instructor. Designing and building the course, giving 2 weekly lectures to <b>300–500</b> students, and <b>managing a staff of 15</b> teaching assistants.	2009–2014
<b>Lecturer</b> , Programming in the Perl Language, Hebrew University Initiator, designer, and primary instructor of a graduate programming course (30 students). Course <b>designed and taught</b> while still <b>an undergraduate</b> student.	2007–2008

## Professional Experience

Mentor, “MEET” (Middle East Education through Technology)	2008
Software Engineer, Check Point Software Technologies LTD	2004–2005
Course Guide, IDF “AHAM” Training Course	2003–2004
Software Engineer, IDF Intelligence Corps	2001–2003

## Technical Skills

Programming languages	Python, C/C++, Java, Matlab, Perl, JavaScript, tcsh/bash.
Deep learning frameworks	PyTorch, AllenNLP.

## Open Source

### SOFTWARE

The Right Tool for the Job <a href="https://github.com/allenai/sledgehammer">https://github.com/allenai/sledgehammer</a>
A Mixture of $h-1$ Heads is Better than $h$ Heads <a href="https://github.com/Noahs-ARK/MaE">https://github.com/Noahs-ARK/MaE</a>
Show Your Work <a href="https://github.com/allenai/allentune">https://github.com/allenai/allentune</a>
RNN Architecture Learning with Sparse Regularization <a href="https://github.com/dodgejesse/sparsifying_regularizers_for_RRNNs">https://github.com/dodgejesse/sparsifying_regularizers_for_RRNNs</a>
PaLM: A Hybrid Parser and Language Model <a href="https://github.com/Noahs-ARK/PaLM">https://github.com/Noahs-ARK/PaLM</a>
Inoculation by Fine-Tuning <a href="https://github.com/nelson-liu/inoculation-by-finetuning">https://github.com/nelson-liu/inoculation-by-finetuning</a>

Rational recurrent neural networks  
<https://github.com/Noahs-ARK/rational-recurrences>

SoPa: Soft patterns recurrent neural networks  
[https://github.com/Noahs-ARK/soft\\_patterns](https://github.com/Noahs-ARK/soft_patterns)

Classifying documents according to their writing style  
[https://github.com/roys174/writing\\_style](https://github.com/roys174/writing_style)

#### DATASETS

SWAG: A large-scale adversarial dataset for grounded commonsense inference  
<https://rowanzellers.com/swag/>

A hard subset of the Stanford natural language inference dataset  
[https://nlp.stanford.edu/projects/snli/snli\\_1.0\\_test\\_hard.jsonl](https://nlp.stanford.edu/projects/snli/snli_1.0_test_hard.jsonl)

A hard subset of the multi-genre natural language inference dataset  
<https://www.kaggle.com/c/multinli-matched-open-hard-evaluation/>

A dataset of peer reviews (PeerRead)  
<https://github.com/allenai/PeerRead>

#### Educational Volunteer Work

**Instructor, Israeli Ministry of Education** 2013–2016  
Instructor of math seminars to elementary school math teachers.

**Volunteer, “Machshava Tova” NPO** 2011–2013  
“Machshava Tova” aims at narrowing social gaps through technology. The position included building an Android programming course for female orthodox high school students.

**Mentor, “Halom” Youth Center** 2006–2008  
Promoting academic skills of high school students by one-on-one tutoring and mentoring.

**Mentor and Teacher, Aldea Infantil Shelter, Puerto-Maldonado, Peru** 2005  
Volunteering in a shelter for children at risk. Mentoring the children and teaching English in a local high school.

**Mentor, “Yachdav” Program** 2001–2003  
Development of mathematical and English skills of high school students by tutoring.

#### Languages

Hebrew	Native Language
English	Full Proficiency
Spanish	Advanced Level
Italian, Literary Arabic	Intermediate Level
Portuguese, Mandarin Chinese	Basic Level