

# Chaitanya Malaviya

4747 16th Ave NE, Seattle, Washington 98105, USA  
chaitanyam@allenai.org • +1 (412) 816-7472 • www.chaitanyamalaviya.github.io

## EDUCATION

- Carnegie Mellon University**, Pittsburgh, Pennsylvania, USA Aug 2016 – Aug 2018
- Master's of Science, Language Technologies, School of Computer Science
    - Advisor: Professor Graham Neubig
    - GPA: 3.99/4.00
- Nanyang Technological University**, Singapore, SINGAPORE Aug 2012 – May 2016
- Bachelor of Technology in Computer Engineering
    - Specialization: High-Performance Computing
    - Thesis: Recommender System for Events with Hybrid Filtering and Ensemble Machine Learning
- Uppsala University**, Uppsala, SWEDEN Jan 2013 – Jun 2013
- Exchange Semester at Department of Information Technology

## PUBLICATIONS

**Chaitanya Malaviya**, Chandra Bhagavatula, Antoine Bosselut, Yejin Choi. *Exploiting Structural and Semantic Context for Commonsense Knowledge Base Completion*. Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI) 2020. [\[Paper\]](#)

Chandra Bhagavatula, Ronan Le Bras, **Chaitanya Malaviya**, Keisuke Sakaguchi, Ari Holtzman, Hannah Rashkin, Doug Downey, Scott Wen-tau Yih, Yejin Choi. *Abductive Commonsense Reasoning*. Submitted to International Conference on Learning Representations (ICLR) 2020. [\[Paper\]](#)

Antoine Bosselut, Hannah Rashkin, Maarten Sap, **Chaitanya Malaviya**, Asli Celikyilmaz and Yejin Choi. *CoMET: Commonsense Transformers for Automatic Knowledge Graph Construction*. Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics (ACL) 2019. [\[Paper\]](#)

**Chaitanya Malaviya\***, Shijie Wu\*, Ryan Cotterell. *A Simple Joint Model for Improved Contextual Neural Lemmatization*. Proceedings of the North American Chapter of the Association for Computational Linguistics (NAACL) 2019. [\[Paper\]](#)

**Chaitanya Malaviya**, Matthew R. Gormley, Graham Neubig. *Neural Factor Graph Models for Cross-lingual Morphological Tagging*. Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics (ACL) 2018. [\[Paper\]](#)

**Chaitanya Malaviya**, Pedro Ferreira, André Martins. *Sparse and Constrained Attention for Neural Machine Translation*. Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics (ACL) 2018. [\[Paper\]](#)

**Chaitanya Malaviya**, Graham Neubig and Patrick Littell. *Learning Language Representations for Typology Prediction*. Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP) 2017. [\[Paper\]](#)

Arya D. McCarthy, Ekaterina Vylomova, Shijie Wu, **Chaitanya Malaviya**, Lawrence Wolf-Sonkin, Garrett Nicolai, Miikka Silfverberg, Sebastian Mielke, Jeffrey Heinz, Ryan Cotterell, Mans Hulden. *The SIGMORPHON 2019 Shared Task: Morphological Analysis in Context and Cross-Lingual Transfer for Inflection*. SIGMORPHON 2019. [\[Paper\]](#)

Shrimai Prabhumoye\*, Fadi Botros\*, **Chaitanya Malaviya\***, Zhou Yu, Alan Black et al. *Building CMU Magnus from User Feedback*. In Proceedings of AWS re:INVENT, 2017. [\[Paper\]](#)

Graham Neubig, Chris Dyer, Yoav Goldberg et al., including **Chaitanya Malaviya**. *DyNet: The Dynamic Neural Network Toolkit*. arXiv, 2017. [\[Paper\]](#)

## RESEARCH EXPERIENCE

**Preddoctoral Young Investigator**, Allen Institute for Artificial Intelligence Oct 2018 – ongoing

- Currently investigating representation learning of concepts grounded in images and language. Method involves joint scene graph generation and visual question answering using pre-trained vision-language models.
- Worked on automatic commonsense knowledge graph construction: 1) KB completion using graph convolutional networks and pre-trained language models. 2) Commonsense Transformer Models (COMET) for generation of commonsense knowledge.
- Curation of abductive commonsense reasoning dataset  $\alpha$ NLI.
- Advisor: Prof Yejin Choi

**Graduate Research Assistant**, Language Technologies Institute Sep 2016 – Aug 2018

- Predicted linguistic typologies for 1017 languages using representations learnt by neural MT systems. Open-sourced language vectors for all languages.
- Proposed neural factor graph models (factorial CRF with neural network potentials). Achieved superior accuracies on the Universal Dependencies treebanks for morphological tagging.
- Participated in CoNLL 2018 Shared Task on Universal Dependency Learning.
- Contributed to benchmarking of DyNet (dynamic neural network library).
- Advisor: Prof Graham Neubig

**Research Intern**, Unbabel May 2017 – Aug 2017

- Worked on improving translation adequacy for neural machine translation.
- Proposed fertility-based NMT model and novel constrained sparsemax function for sparse and constrained attention.
- Outperformed baseline coverage model by 0.6-1.0 BLEU points.
- Advisor: Dr. André Martins

**Research Intern**, Red Cat Labs May 2016 – Aug 2016

- Combined LDA and word2vec to identify industrial sectors of companies using financial reports.
- Implemented named entity recognition and relationship extraction applications for commercial use.
- Advisor: Dr. Martin Andrews

**Research Assistant**, LILY Lab, Nanyang Technological University Aug 2014 – Aug 2015

- Developed a system to synthesize customized text to speech using personalized voice corpus of user.
- Implemented a hybrid of concatenative unit-selection and HMM-based speech synthesis using dynamic time warping to compare prosodies of desired speech and selected speech unit.
- Advisor: Prof Chng Eng Siong

**Research Intern**, PARKAS Group, École Normale Supérieure (INRIA) Jun 2015 – Aug 2015

- Investigated efficiency of building hybrid system modelers in synchronous languages with dedicated type systems and support for complex time interactions.
- Implemented a language parser in OCaml to translate between Simulink models, a graphical programming environment in Matlab, and Zélus, a synchronous language.
- Advisor: Prof Marc Pouzet

## TECHNICAL REPORTS

- Referring Expression Generation for Unseen Objects [\[Report\]](#) 2017
- Optimizing Multiple Rewards for Neural Machine Translation [\[Report\]](#) 2017
- Poetry Modeling with Latent Constraints [\[Report\]](#) 2016
- Large-Scale Search Engine [\[Code\]](#) 2016
- Cross-domain recommendation system for recommending local events [\[Code\]](#) 2016

## ACADEMIC AWARDS

- EMNLP Student Scholarship 2017  
One out of 10 students to receive the EMNLP Student Scholarship covering all conference expenditures.
- Amazon Alexa Prize Grant [\[Team Page\]](#) 2016 – 2017  
Member of 10-member team CMU Magnus awarded \$100K & finished 6/15 in the competition.
- SIA-NOL Youth 100% Scholarship for undergraduate studies 2012 – 2016  
Full scholarship for undergraduate studies offered to 5 students from India.
- Presidents' Research Scholar, School of Computer Science and Engineering, NTU 2016  
For appearing in the top 5% of the cohort and good research and development efforts.
- Best Industrial Attachment Project, School of Computer Science and Engineering, NTU 2016  
Best Overall Performance in Industrial Attachment in the department.

## ACADEMIC ACTIVITIES

- Student Volunteer: ACL 2018, EMNLP 2017, Interspeech 2014.
- Program Committee: JAIR, ACL 2019, NAACL 2019.
- Co-organizer: SIGMORPHON 2019 Shared Task: Crosslinguality and Context in Morphology.

<b>TALKS</b>	▪ Talk at NAACL 2019. Contextual Neural Lemmatization. <a href="#">[Link]</a> .	Jun 2019
	▪ Talk at ACL 2018. Sparse and Constrained Attention for NMT. <a href="#">[Link]</a> .	Jun 2018
	▪ Talk at Allen Institute for Artificial Intelligence. Neural Factor Graph Models. <a href="#">[Link]</a> .	Jun 2018
<b>SKILLS</b>	▪ Programming Languages: Java, JavaScript, C, Python, PHP, HTML5/CSS.	
	▪ Human Languages: Hindi, English, Swedish, beginners Spanish and Portuguese.	
	▪ Toolkits: DyNet, PyTorch, Theano, Keras, TensorFlow, Caffe.	