

# Chaitanya Malaviya

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## 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. [\[Paper\]](#)

<b>RESEARCH EXPERIENCE</b>	<b>Predoctoral Young Investigator</b> , Allen Institute for Artificial Intelligence	Oct 2018 – ongoing
	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Curation of abductive commonsense reasoning dataset <math>\alpha</math>NLI.</li> <li>Advisor: Prof Yejin Choi</li> </ul>	
	<b>Graduate Research Assistant</b> , Language Technologies Institute	Sep 2016 – Aug 2018
	<ul style="list-style-type: none"> <li>Predicted linguistic typologies for 1017 languages using representations learnt by neural MT systems.</li> <li>Proposed neural factor graph models (factorial CRF with neural network potentials). Achieved superior accuracies on the Universal Dependencies treebanks for morphological tagging.</li> <li>Participated in CoNLL 2018 Shared Task on Universal Dependency Learning.</li> <li>Contributed to benchmarking of DyNet (dynamic neural network library).</li> <li>Advisor: Prof Graham Neubig</li> </ul>	
	<b>Research Intern</b> , Unbabel	May 2017 – Aug 2017
	<ul style="list-style-type: none"> <li>Worked on improving translation adequacy for neural machine translation.</li> <li>Proposed fertility-based NMT model and novel constrained sparsemax function for sparse and constrained attention.</li> <li>Outperformed baseline coverage model by 0.6-1.0 BLEU points.</li> <li>Advisor: Dr. André Martins</li> </ul>	
	<b>Research Intern</b> , Red Cat Labs	May 2016 – Aug 2016
	<ul style="list-style-type: none"> <li>Combined LDA and word2vec to identify industrial sectors of companies using financial reports.</li> <li>Implemented named entity recognition and relationship extraction applications for commercial use.</li> <li>Advisor: Dr. Martin Andrews</li> </ul>	
	<b>Research Assistant</b> , LILY Lab, Nanyang Technological University	Aug 2014 – Aug 2015
	<ul style="list-style-type: none"> <li>Developed a system to synthesize customized text to speech using personalized voice corpus of user.</li> <li>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.</li> <li>Advisor: Prof Chng Eng Siong</li> </ul>	
	<b>Research Intern</b> , PARKAS Group, École Normale Supérieure (INRIA)	Jun 2015 – Aug 2015
	<ul style="list-style-type: none"> <li>Investigated efficiency of building hybrid system modelers in synchronous languages with dedicated type systems.</li> <li>Implemented a language parser in OCaml to translate between Simulink models, a graphical programming environment in Matlab, and Zélus, a synchronous language.</li> <li>Advisor: Prof Marc Pouzet</li> </ul>	
	<b>TECHNICAL REPORTS</b>	
	Referring Expression Generation for Unseen Objects <a href="#">[Report]</a>	2017
	Optimizing Multiple Rewards for Neural Machine Translation <a href="#">[Report]</a>	2017
<b>ACADEMIC AWARDS</b>	Poetry Modeling with Latent Constraints <a href="#">[Report]</a>	2016
	Large-Scale Search Engine <a href="#">[Code]</a>	2016
	Cross-domain recommendation system for recommending local events <a href="#">[Code]</a>	2016
	EMNLP Student Scholarship	2017
	One out of 10 students to receive the EMNLP Student Scholarship covering all conference expenditures.	
	Amazon Alexa Prize Grant <a href="#">[Team Page]</a>	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
<b>ACADEMIC ACTIVITIES</b>	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 internship project in the department.	
	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.	

## TALKS

- Talk at NAACL 2019. Contextual Neural Lemmatization. [\[Link\]](#). Jun 2019
- Talk at ACL 2018. Sparse and Constrained Attention for NMT. [\[Link\]](#). Jun 2018
- Talk at Allen Institute for Artificial Intelligence. Neural Factor Graph Models. [\[Link\]](#). Jun 2018