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. *Commonsense Knowledge Base Completion with Structural and Semantic Context*. 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*. Proceedings of the 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

Predoctoral Young Investigator, Allen Institute for Artificial Intelligence — Oct 2018 – ongoing

- Currently investigating domain generalization with generative data augmentation for visual reasoning models.
- Worked on automatic commonsense knowledge graph construction: 1) KB completion using graph convolutional networks and pre-trained language models. 2) Commonsense Transormer Models (COMET) for generation of commonsense knowledge.
- Curation of abductive commonsense reasoning dataset αNLI.
- 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.
- 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.
- 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 internship project 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.

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

SKILLS

- 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.