

Toan Q. Nguyen

CONTACT INFORMATION	355 Fitzpatrick Hall Notre Dame, IN 46556	+1-574-329-2791 tnguye28@nd.edu
RESEARCH INTERESTS	Neural Machine Translation (with focus on low-resource languages), Deep Learning	
EDUCATION	University of Notre Dame , Notre Dame, IN Ph.D., Computer Science	Jan 2016 to present
	<ul style="list-style-type: none">• Advisor: David Chiang, Ph.D University of Southampton , Southampton, UK	Sept 2010 to June 2013
	BEng, Electronic Engineering	
	<ul style="list-style-type: none">• <i>First-class honours</i>	
RESEARCH PROJECTS	Improving lexical choice in NMT We propose two solutions to alleviate the mistranslation for rare words issue in NMT. First, we argue that the output layer, which computes the inner product between the hidden state with all target word embeddings, rewards frequent words disproportionately. So we propose to fix all target word embedding to a certain value. Second, we integrate a simple lexical module which is jointly learned with NMT and whose output is used to bias NMT's prediction. Our experiments on 8 different language pairs show improvements of from 1.1 to 4.3 BLEUs (paper accepted to <i>NAACL'18</i>). Transfer Learning across Low-resource, Related Languages for NMT Using Byte-Pair-Encoding, we generate data with overlapped vocabulary between low-resource, related languages. This data is then used to train a parent model on one language pair, and the trained model is later used to initialize training on another language pair. Our method shows improvements of up to 4.3 BLEUs over a strong BPE baseline for Uyghur-English (paper accepted to <i>IJCNLP'17</i>). Witwicky: An implementation of Transformer in PyTorch Our reimplementation of Vaswani et al.'s Attention Is All You Need (Transformer) with Pytorch. We show that the successive insertion of Layer Normalization in between residual connection makes it difficult to train Transformer. By rerouting the Layer Normalization to the front of each sublayer, training is stable and we no longer need to linearly increase the learning rate (warmup) at the start of training. We further investigate other aspects of training such as regularization, gradient clipping, data preprocessing... Putting together, our implementation performs very well on both low- and high-resource translation tasks, sometimes 5 BLEU higher than other published Transformer baselines. https://github.com/tnq177/witwicky	
RESEARCH EXPERIENCE	Research Assistant Natural Language Processing Group Department of Computer Science and Engineering University of Notre Dame Supervisor: David Chiang, Ph.D	Jan 2016 - present
	Visiting Student	Sep 2018 - Dec 2018

CILVR Group
 Center for Data Science
 New York University
 Supervisor: Kyunghyun Cho, Ph.D

TEACHING EXPERIENCE	Teaching Assistant Spring 2016 CSE 40535/60535 - Computer Vision Instructor: Adam Czajka, Ph.D Division of Computer Science and Engineering, University of Notre Dame
	Teaching Assistant Fall 2016 CSE 40868/60868 - Introduction to Neural Networks Instructor: Adam Czajka, Ph.D Division of Computer Science and Engineering, University of Notre Dame
PROFESSIONAL EXPERIENCE	Software Developer , East Agile Mar 2015 to November 2015 Develop web-based application to convert complicated Google Analytics information to simple and meaningful reports with focus on small businesses.
	Software Developer , Tripchum August 2014 to March 2015 Develop and deploy multiple experimental tools such as Hubot for Google Analytics information analysis and notification on Hipchat, Twitter Direct Message integration with in-house chatting and logging system.
PROGRAMMING SKILLS	Proficient: Python, Pytorch, Tensorflow Basic: C, C++, Javascript, Django, NodeJS, OpenCV
PUBLICATIONS	<ol style="list-style-type: none"> 1. Toan Q. Nguyen and David Chiang. Improving lexical choice in neural machine translation. In <i>Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long Papers)</i>, pages 334–343. Association for Computational Linguistics, 2018 2. Toan Q. Nguyen and David Chiang. Transfer learning across low-resource, related languages for neural machine translation. In <i>Proceedings of the Eighth International Joint Conference on Natural Language Processing (Volume 2: Short Papers)</i>, pages 296–301, Taipei, Taiwan, November 2017. Asian Federation of Natural Language Processing 3. Antonios Anastasopoulos, Alison Lui, Toan Q. Nguyen, and David Chiang. Neural machine translation of text from non-native speakers. In <i>Proc. NAACL HLT</i>, 2019. to appear 4. Leon Cheung, Thamme Gowda, Ulf Hermjakob, Nelson H S Liu, Jonathan May, Alexandra Mayn, Nima Pourdamghani, Michael Pust, Kevin Knight, Nikolaos Malandrakis, Pavlos Papadopoulos, Anil Ramakrishna, Karan Singla, Víctor Martínez, Colin Vaz, Doan Can, S. Narayanan, Kenton Murray, Toan Nguyen, David Chiang, Xiaoman Pan, Boliang Zhang, Ying Chuan Lin, Di Lu, Lifu Huang, Kevin Blissett, Tongtao Zhang, Ondrej Glembek, Murali Karthick Baskar, Santosh Kesiraju, Lukás Burget, Karel Benes, Igor Szoke, Karel Veselý, Camille Goudeseune, M. H. Johnson, Leda Sari, Wenda Chen, and Angli Liu. Elisa system description for lorehlt 2017. 2017

- AWARDS
- Outstanding Graduate Teaching Assistant, University of Notre Dame, Department of Computer Science and Engineering, Spring 2017
 - [The Vietnam Education Foundation Fellowship](#), Cohort 2015
 - GD Sims Prize, University of Southampton, School of Electronics and Computer Science, 2011
 - Honourable Mention, Asian Physics Olympiad, Ulan Bator, Mongolia, 2008

REFERENCES

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Adam Czajka
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