Barret Richard Zoph

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EDUCATION

University of Southern California 2011 - 2015
B.S. in Computer Science Overall GPA: 3.85 Major GPA: 3.91
Relevant Coursework: Empirical Methods in Natural Language Processing (PhD Level), Advanced Analysis of Algorithms (PhD Level), Machine Learning from Signals: Foundations and Methods (PhD Level), Probabilistic Reasoning (Masters/PhD Level)

PUBLICATIONS

"How Much Information Does a Human Translator Add to the Original?" (**B. Zoph**, M. Ghazvininejad, and K. Knight), Proc. EMNLP, 2015.

WORK EXPERIENCE

Research Assistant January 2015 - May 2015, August 2015 - Present
University of Southern California (Advisor: Kevin Knight)

- Developed a bilingual text compression algorithm to obtain a quantitative bound on how much information a human translator adds to a text. This work resulted in an EMNLP long paper.
- For the above paper, I wrote a bilingual text compressor in c++ that achieves state-of-the-art compression results.
- Analyzed and implemented various NLP methods for automatically deciphering the Copiale Cipher. This had previously not been done before.

Research Intern May 2015 - August 2015
Information Sciences Institute/USC (Advisor: Kevin Knight)

- Built a distributed GPU RNN toolkit in C++/CUDA that allows for training multilayer LSTM RNNs across multiple GPU's.
- This toolkit achieves state of the art speeds and performance for language modeling and neural network machine translation.
- Researched various ways to make neural network machine translation work in low resource settings.

Research Assistant May 2014 - August 2014
University of Southern California (Advisor: David Kempe)

- Worked directly with David Kempe at USC on the topics of randomized algorithms and online algorithms.
- Derived expected upper and lower bounds on an online randomized algorithm to query a multilevel boolean NAND tree under certain constraints.
- Researched concepts of submodularity and adaptive submodularity to prove approximation bounds on a greedy algorithm that queries leaves in a forest of overlapping binary decision trees.
- Proved the above problem is NP-complete as well as the existence of an optimal greedy algorithm if there exists only one tree.

Software Engineering Intern May 2013 - August 2013
Higi, Chicago IL

- Full stack developer that helped with front-end web development to improve data visualization for the engineering and business teams using Tableau.
- Setup and maintained SQL databases and integrated them into the backend code base in C#.
- Used various analytical techniques on SQL databases to determine the demographics of the best users along with why user growth dropped in specific areas in the US.

SOFTWARE / TOOLKITS

ZOPH_RNN - A distributed LSTM RNN toolkit that allows you to build huge RNN's across multiple GPU's with state of the art speed. Allows for training with a variety of loss functions such as MLE and NCE.
Link: http://www.isi.edu/natural-language/software/

TECHNICAL SKILLS

Languages - C/C++, CUDA, Python, Java, Matlab, Bash, LaTeX.