Mengzhe Chen

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Summary

With 5 years of research and project experience in speech recognition, focusing on acoustic and language modeling.

Education

09/2011 – 07/2016 **M.E. and Ph.D. Signal and Information Processing – Speech Recognition**
Chinese Academy of Sciences (CAS) , the Institute of Acoustics
Thesis: Mandarin-English Code-mixing Speech Recognition based on Deep Neural Network
Advisor: Yonghong Yan
Recommended for admission to CAS. Received "Outstanding Student" Title

09/2007 – 06/2011 **B.S. Information Engineering**
China University of Mining & Technology
GPA: 91/100 (Rank: 1/137)
Received National Scholarship, "Top Student" Award, "Outstanding Graduate" Title

Selected Research Experience

10/2014 – 01/2016 **Mandarin-English Code-Mixing Speech Recognition System**

- Developed Mandarin-English recognition system based on deep neural network
- Optimized the method of building decision trees for alleviating data imbalance
- Optimized objective function for network training
- Proposed new targets generating method based on forward-backward algorithm
- Introduced auxiliary knowledge into acoustic models with shared-hidden-layer networks
- Applied class-based language model to system and implemented it on two-level-graph decoder
- Recognition performances on code-mixing test sets improved 12%-15% relatively

10/2013 – 04/2014 **Language Modeling for Mobile Phone Assistant System**

- Constructed a speech recognition system for mobile phone assistant
- Explored effects of different segmentation methods on speech recognition
- Optimized the lexicon according to non-native pronunciation habits
- Successfully shipped to production

07/2013 – 09/2013 **Automatic Training Data Generating for Language Model**

- Generated training data with recurrent neural network
- Proposed a method of expanding data with word vectors
- Perplexity reduced 6% relatively, 3-gram hit rate increased 7% relatively

12/2012 – 06/2013 **Domain Adaptation for Language Model with Web Data for Voice Retrieval**

- Developed language model domain adaptation system for real-world voice retrieval
- Implemented web-data crawler with data preprocessing pipeline
- Proposed block-based adaptation method for building domain models
- Proposed a method of extracting hot search terms to update the lexicon
- System was applied on various domains with absolute improvements of 3% to 5%

Selected Publications

- Chen, M., Pan, J., & Yan, Y. "**Multi-Task Learning in Deep Neural Networks for Mandarin-English Code-Mixing Speech Recognition**". IEICE TRANSACTIONS on Information and Systems, 2016, 99(10): 2554-2557.
- Chen, M., Zhang, Q., Wang, Z., Pan, J., & Yan, Y. "**Domain Adaptation for Language Model with Web Data for Voice Retrieval**". Journal of Information & Computational Science, 2015, 12(18):6883-6892.
- Chen, M., Zhang, Q., Pan, J., & Yan, Y. "**Boosted Hybrid DNN/HMM System Based on Correlation-Generated Targets**". In Intelligent Information Hiding and Multimedia Signal Processing, Tenth International Conference on IEEE. 2014: 590-593.

Technical Strengths

Programming Languages: C/C++, perl, shell, matlab

Languages: Chinese, English