Contents

IR/Search/Bot

Jointly Modeling Intent Identification and Slot Filling with Contextual and Hierarchical Information ...................................................... 3
   Liyun Wen, Xiaojie Wang, Zhenjiang Dong, and Hong Chen

Augmenting Neural Sentence Summarization Through Extractive Summarization ................................................................. 16
   Junnan Zhu, Long Zhou, Haoran Li, Jiajun Zhang, Yu Zhou, and Chengqing Zong

Cascaded LSTMs Based Deep Reinforcement Learning for Goal-Driven Dialogue ................................................................. 29
   Yue Ma, Xiaojie Wang, Zhenjiang Dong, and Hong Chen

Dialogue Intent Classification with Long Short-Term Memory Networks ................................................................. 42
   Lian Meng and Minlie Huang

An Ensemble Approach to Conversation Generation ................................................................. 51
   Yimeng Zhuang, Xianliang Wang, Han Zhang, Jinghui Xie, and Xuan Zhu

First Place Solution for NLPCC 2017 Shared Task Social Media User Modeling ................................................................. 63
   Lingfei Qian, Anran Wang, Yan Wang, Yuhang Huang, Jian Wang, and Hongfei Lin

Knowledge Graph/IE/QA

Large-Scale Simple Question Generation by Template-Based Seq2seq Learning ................................................................. 75
   Tianyu Liu, Bingzhen Wei, Baobao Chang, and Zhifang Sui

A Dual Attentive Neural Network Framework with Community Metadata for Answer Selection ................................................................. 88
   Zhiqiang Liu, Mengzhang Li, Tianyu Bai, Rui Yan, and Yan Zhang

Geography Gaokao-Oriented Knowledge Acquisition for Comparative Sentences Based on Logic Programming ................................................................. 101
   Xuelian Li, Qian Liu, Man Zhu, Feifei Xu, Yunxiu Yu, Shang Zhang, Zhaoxi Ni, and Zhiqiang Gao
### Machine Learning

A Deep Learning Way for Disease Name Representation and Normalization

*Hongwei Liu and Yun Xu*

Externally Controllable RNN for Implicit Discourse Relation Classification

*Xihan Yue, Luoyi Fu, and Xinbing Wang*

Random Projections with Bayesian Priors

*Keegan Kang*

A Convolutional Attention Model for Text Classification

*Jiachen Du, Lin Gui, Ruifeng Xu, and Yulan He*

Shortcut Sequence Tagging

*Huijia Wu, Jiajun Zhang, and Chengqing Zong*

### Machine Translation

Look-Ahead Attention for Generation in Neural Machine Translation

*Long Zhou, Jiajun Zhang, and Chengqing Zong*

Modeling Indicative Context for Statistical Machine Translation

*Shuangzhi Wu, Dongdong Zhang, Shujie Liu, and Ming Zhou*

A Semantic Concept Based Unknown Words Processing Method in Neural Machine Translation

*Shaotong Li, Jinan Xu, Guoyi Miao, Yujie Zhang, and Yufeng Chen*

Research on Mongolian Speech Recognition Based on FSMN

*Yonghe Wang, Feilong Bao, Hongwei Zhang, and Guanglai Gao*

Using Bilingual Segments to Improve Interactive Machine Translation

*Na Ye, Ping Xu, Chuang Wu, and Guiping Zhang*
Vietnamese Part of Speech Tagging Based on Multi-category Words
Disambiguation Model ........................................... 267
Zhao Chen, Liu Yanchao, Guo Jianyi, Chen Wei,
Yan Xin, Yu Zhengtao, and Chen Xiuqin

NLP Applications

Unsupervised Automatic Text Style Transfer Using LSTM .... 281
Mengqiao Han, Ou Wu, and Zhendong Niu

Optimizing Topic Distributions of Descriptions for Image
Description Translation ........................................... 293
Jian Tang, Yu Hong, Mengyi Liu, Jiashuo Zhang, and Jianmin Yao

Automatic Document Metadata Extraction Based on Deep Networks .... 305
Runtao Liu, Liangcai Gao, Dong An, Zhuoren Jiang, and Zhi Tang

A Semantic Representation Enhancement Method for Chinese News
Headline Classification ........................................... 318
Zhongbo Yin, Jintao Tang, Chengsen Ru, Wei Luo, Zhunchen Luo,
and Xiaolei Ma

Abstractive Document Summarization via Neural Model
with Joint Attention ........................................... 329
Liwei Hou, Po Hu, and Chao Bei

An Effective Approach for Chinese News Headline Classification Based
on Multi-representation Mixed Model with Attention
and Ensemble Learning ........................................... 339
Zhonglei Lu, Wenfen Liu, Yanfang Zhou, Xuexian Hu, and Binyu Wang

NLP Fundamentals

Domain-Specific Chinese Word Segmentation
with Document-Level Optimization ................................ 353
Qian Yan, Chenlin Shen, Shoushan Li, Fen Xia, and Zekai Du

Will Repeated Reading Benefit Natural Language Understanding? .... 366
Lei Sha, Feng Qian, and Zhifang Sui

A Deep Convolutional Neural Model for Character-Based
Chinese Word Segmentation .................................. 380
Zhipeng Xie and Junfeng Hu

Chinese Zero Pronoun Resolution: A Chain to Chain Approach .... 393
Kong Fang and Zhou Guodong
Towards Better Chinese Zero Pronoun Resolution
from Discourse Perspective ........................................... 406
    Sheng Cheng, Kong Fang, and Zhou Guodong

Neural Domain Adaptation with Contextualized Character Embedding
for Chinese Word Segmentation ..................................... 419
    Zuyi Bao, Si Li, Sheng Gao, and Weiran Xu

BiLSTM-Based Models for Metaphor Detection ..................... 431
    Shichao Sun and Zhipeng Xie

Hyper-Gated Recurrent Neural Networks for Chinese
Word Segmentation ....................................................... 443
    Zhan Shi, Xinchi Chen, Xipeng Qiu, and Xuanjing Huang

Effective Semantic Relationship Classification of Context-Free Chinese
Words with Simple Surface and Embedding Features .................. 456
    Yunxiao Zhou, Man Lan, and Yuanbin Wu

Classification of Chinese Word Semantic Relations ................. 465
    Changliang Li and Teng Ma

Social Network

Identification of Influential Users Based on Topic-Behavior
Influence Tree in Social Networks .................................... 477
    Jianjun Wu, Ying Sha, Rui Li, Qi Liang, Bo Jiang, Jianlong Tan,
    and Bin Wang

Hierarchical Dirichlet Processes with Social Influence .............. 490
    Jin Qian, Yeyun Gong, Qi Zhang, and Xuanjing Huang

A Personality-Aware Followee Recommendation Model Based on Text
Semantics and Sentiment Analysis ................................... 503
    Pan Xiao, YongQuan Fan, and YaJun Du

A Novel Community Detection Method Based on Cluster Density Peaks ... 515
    Donglei Liu, Yipeng Su, Xudong Li, and Zhendong Niu

Text Mining

Review Rating with Joint Classification and Regression Model .... 529
    Jian Xu, Hao Yin, Lu Zhang, Shoushan Li, and Guodong Zhou
Boosting Collective Entity Linking via Type-Guided Semantic Embedding
Weiming Lu, Yangfan Zhou, Haijiao Lu, Pengkun Ma, Zhenyu Zhang, and Baogang Wei

Biomedical Domain-Oriented Word Embeddings via Small Background Texts for Biomedical Text Mining Tasks
Lishuang Li, Jia Wan, and Degen Huang

Homographic Puns Recognition Based on Latent Semantic Structures
Yufeng Diao, Liang Yang, Dongyu Zhang, Linhong Xu, Xiaochao Fan, Di Wu, and Hongfei Lin

Short Papers
Constructing a Chinese Conversation Corpus for Sentiment Analysis
Yujun Zhou, Changliang Li, Bo Xu, Jiaming Xu, Lei Yang, and Bo Xu

Improving Retrieval Quality Using PRF Mechanism
from Event Perspective
Pengming Wang, Peng Li, Rui Li, and Bin Wang

An Information Retrieval-Based Approach to Table-Based Question Answering
Junwei Bao, Nan Duan, Ming Zhou, and Tiejun Zhao

Building Emotional Conversation Systems Using Multi-task Seq2Seq Learning
Rui Zhang, Zhenyu Wang, and Dongcheng Mai

NLPCC 2017 Shared Task Social Media User Modeling Method
Summary by DUTIR_923
Dongzhen Wen, Liang Yang, HengChao Li, Kai Guo, Peng Fei, and HongFei Lin

Babbling - The HIT-SCIR System for Emotional Conversation Generation
Jianhua Yuan, Huapeng Zhao, Yanyan Zhao, Dawei Cong, Bing Qin, and Ting Liu

Unsupervised Slot Filler Refinement via Entity Community Construction
Zengzhuang Xu, Rui Song, Bowei Zou, and Yu Hong

Relation Linking for Wikidata Using Bag of Distribution Representation
Xi Yang, Shiya Ren, Yuan Li, Ke Shen, Zhixing Li, and Guoyin Wang
Neural Question Generation from Text: A Preliminary Study .......................... 662
Qingyu Zhou, Nan Yang, Furu Wei, Chuanqi Tan, Hangbo Bao,
and Ming Zhou

Answer Selection in Community Question Answering by Normalizing
Support Answers ................................................................. 672
Zhihui Zheng, Daohe Lu, Qingcai Chen, Haijun Yang, Yang Xiang,
Youcheng Pan, and Wei Zhong

An Empirical Study on Incorporating Prior Knowledge into BLSTM
Framework in Answer Selection ............................................. 683
Yahui Li, Muyun Yang, Tiejun Zhao, Dequan Zheng, and Sheng Li

Enhanced Embedding Based Attentive Pooling Network
for Answer Selection ......................................................... 693
Zhan Su, Benyou Wang, Jiabin Niu, Shuchang Tao, Peng Zhang,
and Dawei Song

A Retrieval-Based Matching Approach to Open Domain
Knowledge-Based Question Answering ................................. 701
Han Zhang, Muhua Zhu, and Huizhen Wang

Improved Compare-Aggregate Model for Chinese Document-Based
Question Answering ........................................................... 712
Ziliang Wang, Weijie Bian, Si Li, Guang Chen, and Zhiqing Lin

Transfer Deep Learning for Low-Resource Chinese Word Segmentation
with a Novel Neural Network .................................................. 721
Jingjing Xu, Shuming Ma, Yi Zhang, Bingzhen Wei, Xiaoyan Cai,
and Xu Sun

AHNN: An Attention-Based Hybrid Neural Network
for Sentence Modeling ......................................................... 731
Xiaomin Zhang, Li Huang, and Hong Qu

Improving Chinese-English Neural Machine Translation with Detected
Usages of Function Words .................................................... 741
Kunli Zhang, Hongfei Xu, Deyi Xiong, Qiuhui Liu, and Hongying Zan

Using NMT with Grammar Information and Self-taught Mechanism
in Translating Chinese Symptom and Disease Terminologies ............. 750
Lu Zeng, Qi Wang, and Lingfei Zhang

Learning Bilingual Lexicon for Low-Resource Language Pairs ............. 760
ShaoLin Zhu, Xiao Li, YaTing Yang, Lei Wang, and ChengGang Mi
Exploring the Impact of Linguistic Features for Chinese Readability Assessment .................................................. 771
Xinying Qiu, Kebin Deng, Likun Qiu, and Xin Wang

A Semantic-Context Ranking Approach for Community-Oriented English Lexical Simplification .................................................. 784
Tianyong Hao, Wenxiu Xie, and John Lee

A Multiple Learning Model Based Voting System for News Headline Classification .................................................. 797
Fenhong Zhu, Xiaozheng Dong, Rui Song, Yu Hong, and Qiaoming Zhu

Extractive Single Document Summarization via Multi-feature Combination and Sentence Compression ................................. 807
Maofu Liu, Yan Yu, Qiaosong Qi, Huijun Hu, and Han Ren

A News Headlines Classification Method Based on the Fusion of Related Words .................................................. 818
Yongguan Wang, Binjie Meng, Pengyuan Liu, and Erhong Yang

Resolving Chinese Zero Pronoun with Word Embedding .................................................. 828
Bingquan Liu, Xinkai Du, Ming Liu, Chengjie Sun, Guidong Zheng, and Chao Zou

Active Learning for Chinese Word Segmentation on Judgements .................................................. 839
Qian Yan, Limin Wang, Shoushan Li, Huan Liu, and Guodong Zhou

Study on the Chinese Word Semantic Relation Classification with Word Embedding .................................................. 849
E. Shijia, Shengbin Jia, and Yang Xiang

HDP-TUB Based Topic Mining Method for Chinese Micro-blogs .................................................. 856
Yaorong Zhang, Bo Yang, Li Yi, Yi Liu, and Yangsen Zhang

Detecting Deceptive Review Spam via Attention-Based Neural Networks .................................................. 866
Xuepeng Wang, Kang Liu, and Jun Zhao

A Tensor Factorization Based User Influence Analysis Method with Clustering and Temporal Constraint .................................................. 877
Xiangwen Liao, Lingying Zhang, Lin Gui, Kam-Fai Wong, and Guolong Chen

Cross-Lingual Entity Matching for Heterogeneous Online Wikis .................................................. 887
Weiming Lu, Peng Wang, Huan Wang, Jiahui Liu, Hao Dai, and Baogang Wei
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Unified Probabilistic Model for Aspect-Level Sentiment Analysis</td>
<td>900</td>
</tr>
<tr>
<td><em>Daniel Stantic and Fei Song</em></td>
<td></td>
</tr>
<tr>
<td>An Empirical Study on Learning Based Methods for User Consumption Intention Classification</td>
<td>910</td>
</tr>
<tr>
<td><em>Mingzhou Yang, Daling Wang, Shi Feng, and Yifei Zhang</em></td>
<td></td>
</tr>
<tr>
<td>Overview of the NLPCC 2017 Shared Task: Chinese Word Semantic Relation Classification</td>
<td>919</td>
</tr>
<tr>
<td><em>Yunfang Wu and Minghua Zhang</em></td>
<td></td>
</tr>
<tr>
<td>Overview of the NLPCC 2017 Shared Task: Emotion Generation Challenge</td>
<td>926</td>
</tr>
<tr>
<td><em>Minlie Huang, Zuoxian Ye, and Hao Zhou</em></td>
<td></td>
</tr>
<tr>
<td>Overview of the NLPCC-ICCPOL 2017 Shared Task: Social Media User Modeling</td>
<td>937</td>
</tr>
<tr>
<td><em>Fuzheng Zhang, Defu Lian, and Xing Xie</em></td>
<td></td>
</tr>
<tr>
<td>Overview of the NLPCC 2017 Shared Task: Single Document Summarization</td>
<td>942</td>
</tr>
<tr>
<td><em>Lifeng Hua, Xiaojun Wan, and Lei Li</em></td>
<td></td>
</tr>
<tr>
<td>Overview of the NLPCC 2017 Shared Task: Chinese News Headline Categorization</td>
<td>948</td>
</tr>
<tr>
<td><em>Xipeng Qiu, Jingjing Gong, and Xuanjing Huang</em></td>
<td></td>
</tr>
<tr>
<td>Overview of the NLPCC 2017 Shared Task: Open Domain Chinese Question Answering</td>
<td>954</td>
</tr>
<tr>
<td><em>Nan Duan and Duyu Tang</em></td>
<td></td>
</tr>
<tr>
<td><strong>Author Index</strong></td>
<td>963</td>
</tr>
</tbody>
</table>
Natural Language Processing and Chinese Computing
6th CCF International Conference, NLPCC 2017, Dalian, China, November 8-12, 2017, Proceedings
Huang, X.; Jiang, J.; Zhao, D.; Feng, Y.; Hong, Y. (Eds.)
2018, XXII, 966 p. 208 illus., Softcover
ISBN: 978-3-319-73617-4