Xishuang Dong

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✉ xidong@pvamu.edu

Education

Computer Engineering — **Harbin Institute of Technology**
Ph.D., Harbin, Heilongjiang Province, China — *04/2008–07/2013*

Computer Engineering — **Harbin Engineering University**
Master, Harbin, Heilongjiang Province, China — *09/2005–03/2008*

Computer Engineering — **Harbin University of Science and Technology**
Bachelor, Harbin, Heilongjiang Province, China — *09/2001–07/2005*

Doctoral Dissertation

Title: *Research on Immune Multi-word-agent Autonomy Learning Based Sentiment Analysis*

Supervisors: Prof. Yi Guan

Description: This research involves three parts of developing novel methods to complete sentiment analysis of texts. First part is to present a semi-supervised model based on set-similarity joins to recognize sentiment polarities of words and sentences via Maximum Entropy model. In the second part, inspired by similarities between the human immune system and the human language system, an autonomy learning model via adaptive immune theories is constructed in two steps: (1) building an artificial immune system based on the plasma negative regulation mechanism by multi-agent system modeling; (2) proposing a multi-word-agent autonomy learning model on the system through simulating words in sentences as immune cells and molecules to optimize relations between words, which can learn continuously by interactions between immune word-agents in the on-line learning manner; The third part applies the autonomy learning model to complete sentiment analysis on collocations, and experiments show that the performance could be improved significantly.

Research Interests

Machine Learning for Biomedical Big Data Analytics
- Deep learning for MRI imaging analytics;
- Dimension reduction of biomedical data;
- Unification of multiple biomedical data types using autoencoder;
- Information extraction of electronic medical records;

Deep Learning for Cyber Physical Systems
- Distributed deep learning on IoT;
- Deep learning based seismic data analysis;
- Load forecasting via deep learning for smart grid;

Professional Experience

Postdoc — **Houston, Texas**
Prairie View A&M University, USA — *06/2016–Now*
- Guiding Students to Win the CyberC 2016 IEEE Big Data Analytics Competition organized by the IEEE Big Data Initiative held in Chengdu, China (10/13/2016–10/14/2016);
- Organizing an intensive training on "Deep Learning Tutorial and Hands-on Training" during The Second Workshop of Mission-Critical Big Data Analytics (MCBDA 2017);
- Presenting researches of deep learning in conferences;
  - "A CNN Based Bagging Learning Approach to Short-Term Load Forecasting in Smart Grid", The third IEEE International Conference on Cloud and Big Data Computing (CBDCom), 2017;
  - "A multiclass classification method based on deep learning for named entity recognition in electronic medical records." In New York Scientific Data Summit (NYSDS), 2016;

Teaching Experience

Postdoc **Houston, Texas**

Prairie View A&M University, USA *06/2016–Now*

- Sample Courses;
  - Deep Learning (Spring 2017);
  - Machine Learning (Fall 2016);

Assistant Professor **Xinyang, Henan**

Dept. of Computer and Information Science, Xinyang Normal University, China *07/2014–Now*

- Sample Courses;
  - Data Structure;
  - Database Application Techniques;
  - Programming Languages: C++;

Awards

- Chinese Opinion Analysis Evaluation 2011: Winner of the task of mining sentiment words;
- Text REtrieval Conference 2010: Winner of the task of Faceted Blog Distillation;
- Chinese Opinion Analysis Evaluation 2009: Winner of two tasks: (1) Mining sentiment words; (2) Sentiment analysis on sentences;

Computer Skills

Deep Learning Platform: TensorFlow, Spark

Programming Languages: Python, C++, C

Publications

Journal

- Huang, Lei, **Xishuang Dong**, and T. Edward Clee, "A scalable deep learning platform for identifying geologic features from seismic attributes." The Leading Edge, Vol. 36 no. 3 pp. 249-256, 2017.
- **Xishuang Dong**, Xinbo Lv, Yi Guan, and Jinfeng Yang. Multi-word-Agent Autonomy Learning Based on Adaptive Immune Theories. JDCTA: International Journal of Digital Content Technology and its Applications, 2013, 7(3): 723-745.

Conference

- **Xishuang Dong**, Hsiang-Huang Wu, Lijun Qian, Yuzhong Yan. "Hierarchical Transfer Convolutional Neural Networks for Image Classification", CVPR, 2018. (Submitted)
- **Xishuang Dong**, Shanta Chowdhury, Lijun Qian, Yi Guan, Jinfeng Yang, Qiubin Yu. "Transfer Bi-directional LSTM RNN for Named Entity Recognition in Chinese Electronic Medical Records", 19th International Conference on E-health Networking, Application & Services, 2017.
- **Xishuang Dong**, Lijun Qian, Lei Huang. "A CNN Based Bagging Learning Approach to Short-Term Load Forecasting in Smart Grid", IEEE CBDCom Conference Proceedings, 2017.
- **Dong, Xishuang**, Lijun Qian, and Lei Huang. "Short-term load forecasting in smart grid: A combined CNN and K-means clustering approach." 2017 IEEE International Conference on Big Data and Smart Computing (BigComp), 2017.
- **Dong, Xishuang**, Lijun Qian, Yi Guan, Lei Huang, Qiubin Yu, and Jinfeng Yang. "A multiclass classification method based on deep learning for named entity recognition in electronic medical records." In 2016 New York Scientific Data Summit (NYSDS), pp. 1-10.
- Yang, Jinfeng, **Xishuang Dong**, and Yi Guan. "Words Are Analogous To Lymphocytes: A Multi-Word-Agent Autonomous Learning Model." Progress in Systems Engineering. Springer, Cham, 2015. 755-760.
- Yang, Jinfeng, Yi Guan, and **Xishuang Dong**. "A Multi-word-agent Autonomous Learning Model for Regulating Word Combination Strength." International Journal of Multimedia and Ubiquitous Engineering 10.4 (2015): 355-366.
- Yang, Jinfeng, Yi Guan, **Xishuang Dong**, and Bin He. "Representing Words as Lymphocytes." In AAAI, pp. 3146-3147. 2014.
- **Xishuang Dong**, Qibo Zou, and Yi Guan. Set-Similarity Joins Based Semi-supervised Sentiment Analysis. In Proceedings of the 19th international conference on Neural Information Processing (ICONIP'12), Vol. Part I. Springer-Verlag, Berlin, Heidelberg, 2012, pp. 176-183.
- Yang, Jinfeng, **Xishuang Dong**, Yi Guan, Chengzhen Huang, and Sheng Wang. "HIT_LTRC at TREC 2010 Blog Track: Faceted Blog Distillation." In TREC. 2010.
- **Dong, Xishuang**, Xiaodong Chen, Yi Guan, Zhiming Yu, and Sheng Li. "An overview of learning to rank for information retrieval." In Computer Science and Information Engineering, 2009 WRI World Congress on, vol. 3, pp. 600-606. IEEE, 2009.

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Electrical & Computer Engineering, Prairie View A&M University
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November 22, 2017

Dear Faculty Search Committee,

I am writing this letter to apply for the tenure-track Assistant Professor (Computational Systems Biology) in the Electrical & Computer Engineering department, as advertised on the Prairie View A&M University website (posting number: F00179JP). I am currently a Postdoc researcher in the Electrical & Computer Engineering department at Prairie View A&M University. The posted faculty position is extremely interested to me because of my background in machine learning and my interests in computational systems biology, and I would like to further my research in this area and become an independent researcher and a dedicated educator.

In the past nine years, my research has focused on machine learning and artificial intelligence, such as natural language processing. My doctoral dissertation examines the use of immune theory for the design of machine learning algorithms for language sequence analysis, where my proposed approach takes advantage of the similarity between language sequence and gene sequence. I have proposed and developed an immune theory based machine learning algorithm which has superior performance when analyzing sentiment polarity of words, sentences, and texts. The results have been published in journals and flagship conferences in Artificial Intelligence (AI), such as in AAAI 2014.

After joining Prairie View A&M University as a Postdoc researcher, my research has focused on deep learning and its applications. The convergence of increased computing power, big data, and breakthroughs in machine learning especially deep learning set the stage for AI to transform our lives in the future such as in biomedical science and healthcare. I plan to improve my research in deep learning and explore its potential applications in computational systems biology. For instance, one of my recent efforts involves development of combining transfer learning and fully convolutional networks for recognizing tumor from MRI images. Another of my effort is to extract biomedical significant terms automatically from electronic medical records to help physicians for better diagnostics.

In addition to research activities, I am also an active educator and mentor. I have many years of teaching experiences such as teaching both undergraduate and graduate courses as an assistant professor in Xinyang Normal University in China. I have been mentoring students and assisting them with learning and research projects. For example, I have led a team of students and won the CyberC 2016 IEEE Big Data Analytics competition. These experiences have built up my confidence and more interests in teaching. I look forward to the opportunity to not only teach existing courses, but also develop new ones.

I would enjoy discussing this position with you in the coming weeks, and I am enclosing my curriculum vitae for your reference. If you require any additional materials or information, I am happy to supply it. Thank you very much for your consideration.

Yours faithfully,

Xishuang Dong