YUANXUN ZHANG

105 W Broadway Apt. 3, Columbia, Missouri, 65203

☏ +1(573)-639-1469 ⋄ ✉ yzd3b@mail.missouri.edu ⋄ ⌂ https://zhangyuanxun.github.io/

EDUCATION

University of Missouri - Columbia, USA   Sep 2013 - Present
PhD Candidate in Computer Science
Department of Electrical Engineering and Computer Science
(*Expected Graduation Date: May 2020*)

Southwest Jiaotong University, China   Sep 2002-Jue 2006
Bachelor of Engineering in Computer Science

RESEARCH INTERESTS

Machine Learning, Deep Learning, Generative Models, Statistical Learning, Recommendation Systems, Natural Language Processing, Information Retrieval

SKILLS

Programming Languages	Python, C/C++, Matlab, Java, Javascript, HTML
Software Libraries	TensorFlow, Numpy, Pandas, scikit-learn, Spark, CUDA
Others	Aws, Linux, Latex, Markdown

RESEARCH EXPERIENCE

ScholarFinder: Knowledge Embedding using Deep Generative Model   2019
Core Research Assistant   University of Missouri
Keywords: Deep Learning, Deep Generative Model, TensorFlow, Python
- Embed scholars' knowledge using the Variational Autoencoder (VAE) model based on their publications
- Design a novel negative sampling scheme to deal with unbalanced labels issue
- Use pre-trained knowledge embeddings for predicting whether a scholar is suitable for a proposed task or not using DNN model

Probabilistic Topic Model for Knowledge Discovery in Scientific Communities   2018-2019
Core Research Assistant   University of Missouri
Keywords: Probabilistic Generative Model, Topic Mode, LDA, MCMC, Python
- Implement Python scripts to extract papers' abstracts from online journal archives
- Extend Latent Dirichlet Allocation (LDA) model to automatically discover relationships among research tools, research datasets and research topics from large collections of scientific publications, which can guide scientists or researchers to choose suitable tools or datasets for their research
- Derive the inference algorithm for inferring latent variables of our model using MCMC (Gibbs sampling)
- Design trend analysis algorithm to understand the trend of tools or datasets over years (such as which tools or datasets are more popular at certain years?)

Implement Basic Deep Learning Framework using CUDA   Nov 2017
Course Project   University of Missouri
Keywords: Deep Learning, CUDA, C/C++

- Use Caffe as an example to learn the deep learning framework
- Implement basic deep learning framework in C/C++ and computational function using CUDA, such as implementing basic layers (e.g., ReLU, Sigmoid) for forward and back-propagation; loading model files to generate computation graph

Detect and Classify DDoS Attacks in Cloud Platforms — Summer 2017
Research Assistant — University of Missouri
Keywords: Machine Learning, XGBoost, Python
- Design and implement a two-stage multi-class detection algorithm to detect and classify networking attacks using XGBoost

Measurements Recommendation for Network Performance Management — 2016-2017
Core Research Assistant — University of Missouri
Keywords: Recommendation System, Network Performance, Data Analysis
- Propose a novel measurements recommendation system on network performance monitoring platform for fully utilizing measurements to identify and diagnose network anomaly events
- Adapt the concept of collaborative filtering scheme to find potential sites that have similar networking issues, which can help those users diagnose network anomalies collaboratively
- Adapt the concept of content-based filtering scheme to filter out measurements based on spatial and temporal features, which can help the users find relevant measurements for spatial or temporal analysis
- Use Bayesian Inference for data sanity checking to strengthen the veracity information of the recommended measurements

PCA-Based Network-wide Anomaly Event Detection and Diagnosis — 2014-2015
Core Research Assistant — University of Missouri
Keywords: PCA, Anomaly Detection, Matlab
- Propose a method that uses PCA to differentiate correlated and uncorrelated anomalies
- Combine PCA and plateau detector algorithms for improving the performance of correlated anomalies detection

WORK EXPERIENCE

Ethernet Ring Protection Switching Protocol for FreeBSD — SUMMER 2016
Software Engineer — Google Summer of Code
Keywords: Networking, C/C++, FreeBSD, Linux
- Design software framework for implementing Ethernet Ring Protection Switching (ERPS) protocol based on ITU-T G.8032 in FreeBSD
- Implement the ERPS protocol in FreeBSD, so that the appliances such as pfSense and FreeNAS can be directly plugged into the ERPS network without the need to sit behind routers

Network Transmission Software Platform — 2006-2013
Software Engineer — Huawei Technologies Co., Ltd.
Keywords: Networking, C/C++, Embedded Programming
- Work on a network software platform and develop networking features for supporting different network devices
- Design and develop the networking features, including EOS (Ethernet Over SDH), MPLS/PW Ethernet service, and layer 2 Ethernet protocols

PUBLICATIONS

[1] **Y. Zhang**, P. Calyam, T. Joshi, S. Nair, and D. Xu, "Domain-specific topic model for knowledge discovery through conversational agents in data intensive scientific communities," in *2018 IEEE International Conference on Big Data (Big Data)*, pp. 4886–4895, IEEE, 2018

[2] R. L. Neupane, T. Neely, N. Chettri, M. Vassell, **Y. Zhang**, P. Calyam, and R. Durairajan, "Dolus: cyber defense using pretense against ddos attacks in cloud platforms," in *Proceedings of the 19th International Conference on Distributed Computing and Networking*, p. 30, ACM, 2018

[3] M. Dickinson, S. Debroy, P. Calyam, S. Valluripally, **Y. Zhang**, R. B. Antequera, T. Joshi, T. White, and D. Xu, "Multi-cloud performance and security driven federated workflow management," *IEEE Transactions on Cloud Computing*, 2018

[4] **Y. Zhang**, P. Calyam, S. Debroy, and S. S. Nuguri, "Social plane for recommenders in network performance expectation management," *IEEE Transactions on Network and Service Management*, vol. 15, no. 1, pp. 97–111, 2017

[5] M. Dickinson, S. Debroy, P. Calyam, S. Valluripally, **Y. Zhang**, T. Joshi, and D. Xu, "End-to-end security formalization and alignment for federated workflow management," in *2016 IEEE 9th International Conference on Cloud Computing (CLOUD)*, pp. 59–67, IEEE, 2016

[6] Y. Liu, S. M. Khan, J. Wang, M. Rynge, **Y. Zhang**, S. Zeng, S. Chen, J. V. M. dos Santos, B. Valliyodan, P. P. Calyam, *et al.*, "Pgen: large-scale genomic variations analysis workflow and browser in soykb," in *BMC bioinformatics*, vol. 17, p. 337, BioMed Central, 2016

[7] **Y. Zhang**, S. Debroy, and P. Calyam, "Network-wide anomaly event detection and diagnosis with perfsonar," *IEEE Transactions on Network and Service Management*, vol. 13, no. 3, pp. 666–680, 2016

[8] **Y. Zhang**, S. Debroy, and P. Calyam, "Network measurement recommendations for performance bottleneck correlation analysis," in *2016 IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN)*, pp. 1–7, IEEE, 2016

[9] **Y. Zhang**, P. Calyam, S. Debroy, and M. Sridharan, "Pca-based network-wide correlated anomaly event detection and diagnosis," in *2015 11th International Conference on the Design of Reliable Communication Networks (DRCN)*, pp. 149–156, IEEE, 2015