Xin Zhang

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Education

University of Chinese Academy of Sciences, *Beijing* 2015 – 2020

Ph.D. candidate in National Network New Media Engineering Research Center

Communication University of China, *Beijing* 2011 – 2015

GPA: 3.81 / 4 Ranking: Top 2% / 103 Recommended Postgraduate

Project Experience

Intelligent Router Service Platform Jul. 2016 – Mar. 2018

Project Description The Chinese Academy of Sciences' strategic pilot project, "Research on a new generation of information technology for China." The project builds a network of content-oriented services in real time by aggregating network edge devices and utilizing autonomous management and collaboration of nodes to provide reliable, real-time and efficient service response.

- Innovatively proposed a decentralized content dissemination system based on the network edge devices;
- A PageRank-based node selection algorithm is proposed, and the service rejection rate is reduced by **[4.4%-8.2%]**;
- A lightweight decentralized approximation method is proposed to solve the problem of high complexity of global PageRank iterative calculation.

Detecting Spam Reviewers for Movies on the Web May. 2018 – Aug. 2018

Project Description Detecting spam reviewers for movies based on the deep learning approach. It is required to improve the classification performance metrics such as accuracy and recall rate in the case of unbalanced samples and missing labels.

- Innovatively proposed the Temporal-Spatial Mapping method, which maps vectors to two-dimensional grayscale images and introduces CNN to extract compression features;
- Synthesizing new samples based on the oversampling SMOTE algorithm to reduce over-fitting risk and solve sample imbalance problem;
- A manual labeling method assisted by clustering is proposed to speed up the manual labeling process of new datasets;
- Experiments show that at least **29%** misjudgments can be corrected, especially for spammers who deliberately imitate ordinary users.

Packet Analysis Software Development Mar. 2016 – May. 2016

Project Description The following eight protocols are parsed from the .pcap file: ARP, IP, ICMP, RIP, OSPF, UDP, TCP, DHCP.

- Building the parsing system independently (C++);
- Building the parsing engine for Wireshark's capture format: .pcap file;
- Developing a GUI based on Qt interface.

Research on Edge Intelligence Technology Oct. 2018 – Mar. 2019

Project Description The research on edge intelligence algorithm is mainly applied to the model learning ability problem when the terminal resources are limited. The goal is to achieve lightweight learning of deep learning algorithms, multi-terminal collaborative computing, fast convergence, low resource consumption, and rapid response capability. It is the main demand scenario for 5G and the Internet of Things.

- Based on the centralized deep learning algorithms, the possibility of distributed, lightweight and deployment at the edge of the network is studied.
- This topic is the research direction of my doctoral thesis, and the research is still in progress.

Academic Achievements

- **Zhang, X.**, You, J., Xue, H., & Wang, J. (2019). A Decentralized PageRank Based Content Dissemination Model in the Edge of Network. *International Journal of Web Services Research, IJWSR* (SCI Journal, the first author)
- You, J., **Zhang, X.**, Lian, W., Detecting Spam Reviewers for Movies on the Web. *Applied Sciences* (SCI Journal, under review, the first author)
- You, J., Xue, H., Zhuo, Y., **Zhang, X.**, & Wang, J. (2017). Forecasting Service Performance on the Basis of Temporal Information by the Conditional Restricted Boltzmann Machine. *IEICE Transactions on Communications.* (SCI Journal)
- Patent: "A Decentralized PageRank Acceleration Method Based on Similarity Estimation", Application number: BDI170716
- Patent: "A Content distribution method based on the dynamic adjustment of coverage rate in node self-organizing network", Application number: 201810027211.2

Honors and Awards

Silver Medal, 13^{th} place, Huawei Software Elite Challenge 2019
Excellent Student Cadre, University of Chinese Academy of Sciences 2017
Merit Studen, University of Chinese Academy of Sciences 2016
Outstanding Party Member, University of Chinese Academy of Sciences 2016
Outstanding Graduates of Beijing, Communication University of China 2015
Scholarship of CCTV, Central People's Broadcasting Station, China Radio International,Communication University of China 2012-2013
Japanese TBS TV Scholarship, Communication University of China 2014

Skills

- CET-6, fluent English reading, writing and communication skills;
- Familiar with C++, Python and linux systems;
- Familiar with basic data structures and algorithms, with good programming style;
- Proficiency in basic deep learning algorithms and deep learning tools such as PyTorch.

Social experience

- Minister of the Graduate School of the Institute of Acoustics, Chinese Academy of Sciences Sep. 2016 – Aug. 2017
- Volunteer of the Public Science Open Day of the Chinese Academy of Sciences 20^{th} May. 2017

Personal evaluation

- Strong sense of responsibility, teamwork awareness, positive work attitude;
- Strong learning ability and willing to accept new things;
- Certain artistic skills:
  * Grade 8 of Piano, Grade 9 of Electronic Piano;
  * Skilled in hand drawing and graphic design, proficient in Adobe Photoshop, Adobe Illustrator and Adobe After Effects. See my **portfolio**;
  * Video editing, once edited technical videos, helped the lab's 5G standard to be successfully established at the ITU International Conference;
  * Love table tennis, billiards, music, photography. Once participated in the table tennis team competition and won the first place.
- Personal website: https://code.nce3xin.me/