

Dan Pei

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Education

- | | | |
|-----------|----------------------------------|---|
| 2000-2005 | Ph.D. in Computer Science | UCLA. Advisor: Dr. Lixia Zhang
Ph.D. Dissertation “On Resilient Internet Routing” studied the security, fault-tolerance, and performance improvement/evaluation of large-scale systems in the context of Internet routing. |
| 1997-2000 | M.S. in Computer Science | Tsinghua University, Beijing, China
Advisor: Dr. Dongsheng Wang. Master thesis “Design and Implementation of Process Migration and Checkpointing in Network of Workstations” |
| 1992-1997 | B.E. in Computer Science | Tsinghua University, Beijing, China |

Working Experience

- Dec.2012-Now Associate Professor, Computer Science Department, Tsinghua University, China. Leading the Network Management (NetMan) research group.
- Sept.2005-Apr.2011 Senior (Principal) Member of Technical Staff - Research, Internet and Networking system, AT&T Labs - Research
- Summer 2003 Summer Intern, AT&T Labs-Research. Worked with Dr. William Aiello, Dr. Anna Gilbert, Dr. Tim Griffin, and Dr. Patrick McDaniel on BGP measurements.
- Summer 2002 Summer Intern, USC/Information Sciences Institute. Worked with Dr. Daniel Massey on packet delivery during routing convergence.
- Summer 2001 Summer Intern, USC/Information Sciences Institute. Worked with Dr. Daniel Massey on formal specifications for BGP and RIP.

Teaching Experience

- Fall2013/Spring2015/Spring2016/Spring2017/Spring2018/Fall2018/Fall2019/Fall2020/Spring2021: Advanced Network Management (also known as AIOps), a graduate course taught in English. It teaches students how to build practical systems that measure the real data from the networks and services, process the real data using big data techniques such as Machine Learning, and solve their real performance and security problems. Through case studies based on recent research papers in top network conferences, this course covers the latest research progress in network management. This course also reviews the techniques that have broader applications more than just network management, such as time series analysis, association rule mining, machine learning, and big data systems. Course materials are updated by ~40% every year.
- Fall2017/Fall2018/Fall2019/Fall2020/Spring2021: Software Engineering (undergraduate)
- Spring 2017/Spring 2018: Computer Networks (undergraduate)

- Spring 2002: Teaching assistant for Computer Network Fundamentals (CS118), UCLA CSD undergraduate course. Responsibilities include weekly recitation, office hours, design and grading of homework, exams and projects.

Research Interests

- AIOps: AI for IT Operations; Autonomous IT Operations.

Selected Honors and Awards

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| 2019 | Teaching Achievement Award of Tsinghua University , Curriculum Design and Process Quality Management of Software Engineering Practice. Xiaoying Bai, Shanshan Li, Mingjie Li, Dan Pei , Yongwei Wu |
| 2019 | IEEE ISSRE 2018 Best Paper , Robust and Rapid Adaption for Concept Drift in Software System Anomaly Detection . Minghua Ma, Shenglin Zhang, Dan Pei , Xin Huang, Hongwei Dai |
| 2018 | Okawa Research Grant , Anomaly Detection through Deep Learning, Japan |
| 2016 | IEEE/ACM IWQoS 2016 Best paper candidate . “M3: Practical and Reliable Multi-Layer Video Multicast over Multi-Rate Wi-Fi Network” by Menghan Li, Dan Pei, Xiaoping Zhang, Beichuan Zhang, Zhi Wang, Hailiang Xu, Zihan Wang |
| 2012 | “ Global Talents Recruitment (Youth) Program ” by Chinese Government |
| 2011 | ACM Senior Member and IEEE Senior Member |
| 2005 | “ Outstanding Ph.D. Award ”, UCLA Computer Science Department
Annual award for best PhD thesis in UCLA Computer Science Department |
| 2005 | “ Best Paper Award ”, IEEE ICDCS 2005 . Beichuan Zhang, Dan Pei , Daniel Massey and Lixia Zhang. “Timer Interactions in Route Flap Damping.” |
| 2004 | IBM Ph.D. Fellowship
<i>“an annual, worldwide competitive program that honors exceptional PhD students in disciplines such as business, chemistry and computer science, as well as emerging technical fields.”</i> |
| 2003 | Dimitris N.Chorafas Foundation Award
<i>“awards scientific prizes worldwide for outstanding research in the engineering sciences, humanities and social sciences, medicine, and the natural sciences”.</i> |
| 1999 | “ Outstanding Junior Researcher Award ”.
Based on research performance, awarded to top 9 students of all Ph.D. and M.S. students (more than 400 in total) in Computer Science Dept., Tsinghua University. |
| 1992 | Ranked 1 st in Hebei Province in China’s 1992 National College Entrance Examination
(http://en.wikipedia.org/wiki/National_College_Entrance_Examination) |

Professional Activities

- **Conference organizing committee:**
IEEE ICNP 2021 TPC Area Chair
AIOps Challenge Algorithm Competition 2018/2019/2020/2021 General Co-Chair

AIOps Workshop 2018/2019/2020/2021 General Co-Chair
IEEE **ICNP HDR-Nets** Workshop 2020 General Co-chair
IEEE **ICNP HDR-Nets** Workshop 2019 TPC Co-chair
IEEE **ICNP** 2019/2020 Publicity Co-chair
ACM SIGCOMM 2014 Judge for Student Research Competition (SRC)
IEEE LANMAN 2014 Publication Chair

- **Conference Technical Committee Member:**

AAAI 2021
ACM **SIGMETRICS** 2021
USENIX **NSDI** 2021
IEEE **ICNP** 2020
IEEE/ACM IWQoS 2020/2021
ACM **IMC** 2016/2017
SREcon Asia/Australia 2017
ACM **CoNEXT** 2016
ACM **ICN** 2016
IEEE Workshop on Big Data and Machine Learning in Telecom 2016
IEEE **LANMAN** 2015/2016
IEEE **INFOCOM** 2010/2011/2012/2013/2014
IEEE **ICC** 2011
IEEE **ICDCS** 2008/2009
WWW 2007

- **IETF Activity:**

One of the acknowledged contributors to BGP standard (**RFC 4271**)

Graduated Students and Post-Docs

1. Ping Liu, Ph.D. 2020, Dissertation: “Failure Detection and Root Cause Localization for Web Service Operation”. First job: Lecturer @ Institute of Artificial Intelligence in Sports, Capital University of Physical Education And Sports, China.
2. Changhua Pei, Post-Doc 2020, Dissertation: “Application Study of Machine Learning on E-commerce Platform”. First job: Algorithm Engineer @ Alibaba.
3. Jing Zhu, Post-Doc 2020, Dissertation: “Theoretical and Algorithm Research on AIOps”. First job: Algorithm Engineer @ BizSeer.
4. Ruming Tang, Ph.D. 2020, Dissertation: “Research on Attack Threat Detection on the Boundaries of Enterprise Networks”. First job: Researcher @ BizSeer.
5. Fede Zaiter, M.S. 2020, “Log Information Extraction for Anomalous Syslogs”. Continued as my Ph.D. student.
6. Xiaohui Nie, Ph.D. 2019, Dissertation: “Research on Key Technologies for Improving Single Service Flow Latency in Web Service”. Co-advised with Youjian Zhao. First job: Post-Doc in Tsinghua University.
7. Jiahao Bu, M.S. 2019. Thesis: “Anomaly Detection and Diagnosis for Key Performance Indicator of Internet Service”. Co-advised with Ying Liu. First job: Algorithm Engineer @Meituan.
8. Lei Zou, M.S. 2019. Thesis: “Clustering-Based Hotspot Analysis and Alarm Compression for Mobile Internet”. First Job: Entrepreneur.

9. Haibin Li, M.S. 2018. Dissertation: “Detection of User Behavior Anomaly and Masquerade Attack Based on Unsupervised Learning”. First job: Assistant Professor @ National University of Defense Technology
10. Yongqian Sun, Ph.D. 2018, Dissertation: “Anomaly Detection and Anomaly Localization for Key Performance Indicators in Web Application”. Co-advised with Youjian Zhao. First job: Assistant Professor @ College of Software, Nankai University, China.
11. Shenglin Zhang, Ph.D. 2017, Dissertation: “Improving the Stability of the Datacenter of Web-based Services”, co-advised with Ying Liu. First job: Assistant Professor @ College of Software, Nankai University, China.
12. Mengyu Zhou, Ph.D. 2017, Characterizing Campus Life in the Age of Mobile Internet, co-advised with Thomas Moscibroda. First job: Associate Researcher at MSRA.
13. Changhua Pei, Ph.D. 2017, Wi-Fi Performance Measurement and Optimization, co-advised with Youjian Zhao. First job: Algorithm Engineer, Alibaba.
14. Shiwen Cheng, M.S. 2017. Dissertation: “Error Log Clustering of Internet Software”, First job: CTO @ BizSeer, Beijing, China.
15. Guo Chen, Ph.D. 2016. Dissertation: “Optimizing the Consistency of Flow Completion Time in Data Center Networks.” Co-advised with Youjian Zhao. First job: Associate Researcher @ Microsoft Research Asia, Beijing, China.
16. Dapeng Liu, Ph.D. 2016. Dissertation: “Anomaly Detection and Bottleneck Identification for Performance of Web Applications.” Co-advised with Youjian Zhao. First job: Engineer @ Operations Department of Baidu, Beijing, China. Now CEO @ BizSeer
17. Kaixin Sui, Ph.D. 2016. Dissertation: “Measuring Performance and Trajectory Privacy Risk for Large-scale Wi-Fi Network Management.” Co-advised with Youjian Zhao. First job: Engineer @ Microsoft Azure Networking, Beijing, China. Now Director of Algorithms at BizSeer
18. Yaodong Zhang, Ph.D. 2016. Dissertation: “Key techniques of collaborative optimization in autonomous network.” Co-advised with Jian Yuan and Yue Wang. First job: Researcher @ China Aerospace Research Institute II, Beijing, China.
19. Menghan Li, Ph.D. 2016. Dissertation: “Performance Optimization for Video Multicast over Deployed 802.11 Wireless LAN.” Co-advised with Xiaoping Zhang and Ke Xu. First job: Researcher at a research institute in Beijing, China.
20. Jianxun Cao, Ph.D. 2016. Dissertation: “Research on Forwarding Strategy in Content-Centric Networking”. Co-advised with Xiaoping Zhang and Youjian Zhao. First job: Researcher at a research institute in Beijing, China.

Current Students

1. Haowen Xu, Ph.D. student, Anomaly Detection in Time Series and Graph Data, started 9/2015.
2. Minghua Ma, Ph.D. student, Anomaly Detection and Localization in Large Online Systems, started 9/2016.
3. Ya Su, co-advised with Youjian Zhao, Time Series Correlation, Anomaly Detection and Outlier Detection, Ph.D. student, started 9/2016.
4. Yuan Meng, Ph.D. student, Causal Analysis, started 9/2016.
5. Weibin Meng, Ph.D. student, Log Analysis, co-advised with Ying Liu, started 9/2016.
6. Nengwen Zhao, Ph.D. student, Alert Analysis, started 9/2017.

7. Zhihan Li, Ph.D. student, co-advised with Youjian Zhao, Time Series Clustering and Anomaly Detection, started 9/2017.
8. Wenxiao Chen, Ph.D. student, Anomaly Detection and Out-of-Distribution Detection, started 9/2017.
9. Qingyang Yu, Ph.D. student, Alert Analysis ,started 9/2017
10. Zeyan Li, Ph.D. student, Anomaly Detection and Localization, started 9/2018.
11. Mingjie Li, Ph.D. student, Failure Troubleshooting, started 9/2018
12. Yao Wang, Master Student, Anomaly Detection System, started 9/2018.
13. Qianyu Ouyang, Ph.D. student, Alert Aggregation and Summarization, started 9/2019.
14. Pinnong Li, Master student , Detection of System Out-of-Memory Failures, started 9/2019.
15. Canhua Wu, Master student, Pattern-based Time Series Anomaly Detection, started 9/2019.
16. Fede Zaiter, Ph.D. student, Knowledge Graph for IT Operations, started 9/2020
17. Zhenhe Yao, Ph.D. student, Time Series Forecasting, started 9/2020.
18. Zhaoyang Yu, Ph.D. student, AutoML for Time Series Algorithms, started 9/2020.
19. Yiran Cheng, Master student, Multi-Attribute Time Series Anomaly Localization, started 9/2020.
20. Xianglin Lu, Master student, Time Series Anomaly Detection, started 9/2020.
21. Xuanrun Wang, Master student, Post-Change Time Series Analysis, started 9/2020.

Current Post-Docs

1. Xiaohui Nie
2. Xidao Wen
3. Mian Du (Jointly sponsored with China National Clearing Center)
4. Chen Yang (Jointly sponsored with China National Clearing Center)

Interns at AT&T

1. Kai Chen, Northwestern, co-authored 2 papers, Ph.D. 2012. First job: Assistant Professor @ HKUST.
2. Amir Reza Khakpour, co-authored 1 paper, Michigan State University, Ph.D. 2012. First job: Engineer @ Verizon.
3. He Yan, Colorado State, co-authored 3 papers, Ph.D. 2011. First job: Researcher @ AT&T Research.
4. Sina farpour, Princeton, co-authored 2 papers, Ph.D. 2011. First job: Yahoo Research.
5. Tongqing Qiu, Georgia Tech, co-authored 4 papers, Ph.D.2011. First job: Senior Software Engineer @ Liaison Technologies.
6. Changxi Zheng, CMU, co-authored 1 paper, Ph.D. 2011. First job: Assistant Professor at Columbia University.
7. Patrick Verkaik, UCSD, co-authored 1 paper, Ph.D. 2010. First job: Cisco Meraki
8. Franck Le, CMU, co-authored 1 paper, Ph.D.2010. First job: Researcher @ IBM Research.
9. Changhoon Kim, Princeton, co-authored 1 paper, Ph.D.2010. First job: Dev Lead @ Microsoft.
10. Suk-Bok Lee, UCLA, co-authored 2 papers, Ph.D.2010. First job: Assistant Professor @ Hanyang University, Korea.
11. Yao Zhao, Northwestern, co-authored 2 papers, Ph.D.2009. First job: Bell Labs.

12. Elliott Karpilovsky, Princeton, co-authored 1 paper, Ph.D.2009. First job: Senior Software Engineer @ Google.
13. Ricardo Oliveria, UCLA, co-authored 4 papers, Ph.D. 2009. First job: Co-Founder & CTO @ Thousands Eyes.

Research Grants

- NSFC 61472214: A Study on Unsupervised Anomaly Detection and Localization for Microservices Based on Multimodal Monitoring Data. PI. 570,000RMB = 88,236USD. 2021/01/01 to 2024/12/31
- Shenzhen Securities Communication Co., Ltd., AIOps scientific research project cooperation agreement. 890,000RMB= 137,772USD. 2020/8/27-2021/4/30
- Classification of Project, Platform as Service Technologies for High-performance Blockchain-based Supply Chain. 325,000RMB=45915USD. 2020/7-2023/6
- ICBC Industrial and Commercial Bank of China, The applied research in network operation domain for the data center of ICBC Industrial and Commercial Bank of China. 469,200RMB= 66,299USD. 2020/3/2-2021/3/31
- Classification of Project, The core technology and theory platform of Multiplex Mode Wisdom Network. 7,520,000RMB= 1,062,597USD. 2020/1/1-2022/12/31
- Bank of China Limited, The research and preliminary practice of AIOps in network operation and maintenance. 840,000RMB= 118,694USD. 2019/12/30-2020/12/30
- Beijing National Research Center for Information Science and Technology. 1050,000RMB= 162,645USD. 2018/11/12-2021/11/12
- Huawei Technologies Co., Ltd., The failure diagnosis technology of machine learning about ADOTP template combination anomaly detection and ADOTS template sequence anomaly detection. 1,800,000RMB=254,345USD. 2019/8-2020/8
- Huawei Technologies Co., Ltd., The failure delimitation and location technology of machine learning based on NLP massive log data multidimensional data feature analysis. 900,000RMB=127,173USD. 2018/7-2019/7
- VMWare Principle Engineer Grant, 20,000USD
- Tsinghua-Tencent Internet Innovative Technology United Laboratory, Analytical Model Of Game Users' Experience/ KPI Cluster/ Algorithm Selection of Anomaly Detection. 500,000RMB=76,081USD. 2017/07-2018/06.
- Beijing Taobao Science and Technology Ltd., Anomaly Detection of Operational Indicator (GOC) /Fault Detection of Database (CloudDBA). 450,000RMB=68,479USD. 2017/01-2018/01.
- Shenzhen Qianhai Weizhong Bank Corporation Ltd., AI for Operations of Weizhong Bank, 500,000RMB=76,081USD. 2017/11-2018/09.
- Intelligent Detection of Operations Supervision Indicator Revulsion, Beijing Sogou technological development Ltd., 56, 0000RMB=85,159USD. 2017/02-2018/01.
- NSFC 61472214: OpsRobot (Network & Service Operations Robot). PI. 860,000RMB = 129,073USD. 01/01/2015 to 31/12/2018.
- NSFC 61472210: Cooperative Performance Improvement among Autonomous Wi-Fi Networks. PI. 860,000RMB = 129,073USD. 01/01/2015 to 31/12/2018.
- 973 Program 2013CB329105: Complex Network Behavior and Its Gaming Theory Perspective. PI 1,284,000RMB = 192,709USD. 01/01/2013 to 31/12/2016.
- NSFC Key Program 61233007: Networking Protocols for Smart Grid. Co-PI. 860,000RMB

= 129,073USD. 01/01/2013 to 31/12/2017.

- Tsinghua National Laboratory for Information Science and Technology key projects: WiFi Union. PI. 500,000RMB = 75,042USD. 01/01/2015 to 31/12/2016.
- Global Talent Recruitment (Youth) Program. SmoothApp: App Performance Management through Big Data Analytics. PI. 2,000,000RMB = 300,170 USD. 01/07/2015 to 31/06/2018.
- The Research Institute of Petro China. Project: Key Technologies for Application Correlation and Robustness. PI. 1,170,000RMB = 175,599USD. 01/01/2015 to 31/12/2015.

Publication Summary

- 144 papers in conferences/journals including SIGCOMM, TON, JSAC, SIGMETRICS, MobiSys, IMC, CoNEXT, ICNP, USENIX Security, INFOCOM, USENIX ATC, WWW, KDD, IJCAI, VLDB, UbiComp, FSE, by January 2021.
- 24 US patents (issued).
- Google Scholar Citation count is 5100+ by Feb 2021.
- SCI citation (excluding self-citations) count is 550+ by July 2020.
- ORCID: 0000-0002-5113-838X
- Scopus ID: 7102806576
- E-versions since 2014 (with slides) are available at: <http://netman.aiops.org/publications/>
- All E-versions are available at: http://scholar.google.com/citations?hl=en&user=i_zA1VsAAAAJ&view_op=list_works&sortby=pubdate

Journal, magazine, conference and workshop publications

2021

CTF: Anomaly Detection in High-Dimensional Time Series with Coarse-to-Fine Model Transfer. Ming Sun, Ya Su, Shenglin Zhang, Yuanpu Cao, Yuqing Liu, Dan Pei, Wenfei Wu, Yongsu Zhang, Xiaozhou Liu, Junliang Tang. **INFOCOM2021**, May 10 – 13, 2021, virtual conference

2020

FluxInfer: Automatic Diagnosis of Performance Anomaly for Online Database System. Ping Liu, Shenglin Zhang, Yongqian Sun, Yuan Meng, Jiahai Yang, Dan Pei. **IPCCC 2020**, November 6 – 8, 2020, virtual conference

VAEPP: Variational Autoencoder with a Pull-back Prior. Wenxiao Chen, Wenda Liu, Zhenting Cai, Haowen Xu, Dan Pei. **ICONIP 2020**, November 18 – 22, 2020, Online

Shallow VAEs with RealNVP Prior Can Perform as Well as Deep Hierarchical VAEs. Haowen Xu, Wenxiao Chen, Jinlun Lai, Zhihan Li, Youjian Zhao, Dan Pei. **ICONIP 2020**, November 18 – 22, 2020, Online

LogTransfer: Cross-System Log Anomaly Detection for Software Systems with Transfer Learning. Rui Chen, Shenglin Zhang, Dongwen Li, Yuzhe Zhang, Fangrui Guo, Weibin Meng, Dan Pei, Yuzhi Zhang, Xu Chen, Yuqing Liu. **ISSRE 2020**, Oct 12 – 15, 2020, Coimbra, Portugal

- Unsupervised Detection of Microservice Trace Anomalies through Service-Level Deep Bayesian Networks. Ping Liu, Haowen Xu, Qianyu Ouyang, Rui Jiao, Zhekang Chen, Shenglin Zhang, Jiahai Yang, Linlin Mo, Jice Zeng, Wenman Xue, Dan Pei. **ISSRE 2020**, Oct 12 – 15, 2020, Coimbra, Portugal
- Real-time Incident Prediction for Online Service Systems. Nengwen Zhao, Junjie Chen, Zhou Wang, Xiao Peng, Gang Wang, Yong Wu, Fang Zhou, Zhen Feng, Xiaohui Nie, Wenchi Zhang, Kaixin Sui, Dan Pei. **ESEC/FSE 2020**, Sacramento, California, United States, November 8, 2020
- A Practical Machine Learning-Based Framework to Detect DNS Covert Communication in Enterprises. Ruming Tang, Cheng Huang, Yanti Zhou, Haoxian Wu, Xianglin Lu, Yongqian Sun, Qi Li, Jinjin Li, Weiyao Huang, Siyuan Sun, Dan Pei. **SecureComm 2020**, October 21-23, 2020, Cyberspace
- Efficient and Robust Syslog Parsing for Network Devices in Datacenter Networks. Shenglin Zhang; Ying Liu; Weibin Meng; Jiahao Bu; Sen Yang; Yongqian Sun; Dan Pei; Jun Xu; Yuzhi Zhang; Lei Song; Ming Zhang. **IEEE Access**
- Diagnosing Root Causes of Intermittent Slow Queries in Cloud Databases. Minghua Ma, Zheng Yin, Shenglin Zhang, Sheng Wang, Christopher Zheng, Xinhao Jiang, Hanwen Hu, Cheng Luo, Yilin Li, Nengjun Qiu, Feifei Li, Changcheng Chen, Dan Pei. **VLDB 2020**, Tokyo, Japan, August 31, 2020.
- A Semantic-aware Representation Framework for Online Log Analysis. Weibin Meng, Ying Liu, Yuheng Huang, Shenglin Zhang, Federico Zaiter, Bingjin Chen, Dan Pei. **ICCCN 2020**, Honolulu, Hawaii, USA, August 3 – August 6, 2020.
- LogParse: Making Log Parsing Adaptive through Word Classification. Weibin Meng, Ying Liu, Federico Zaiter, Shenglin Zhang, Yihao Chen, Yuzhe Zhang, Yichen Zhu, En Wang, Ruizhi Zhang, Shimin Tao, Dian Yang, Rong Zhou, Dan Pei. **ICCCN 2020**, Honolulu, Hawaii, USA, August 3 – August 6, 2020.
- Practical and White-Box Anomaly Detection through Unsupervised and Active Learning. Yao Wang, Zhaowei Wang, Zejun Xie, Nengwen Zhao, Junjie Chen, Wenchi Zhang, Kaixin Sui, Dan Pei. **ICCCN 2020**, Honolulu, Hawaii, USA, August 3 – August 6, 2020.
- Localizing Failure Root Causes in a Microservice through Causality Inference. Yuan Meng, Shenglin Zhang, Yongqian Sun, Ruru Zhang, Zhilong Hu, Yiyin Zhang, Chenyang Jia, Zhaogang Wang, Dan Pei. **IWQOS 2020**, Virtual Conference, 5-17 June 2020
- Understanding and Handling Alert Storm for Online Service Systems. Nengwen Zhao, Junjie Chen, Xiao Peng, Honglin Wang, Xinya Wu, Yuanzong Zhan, Zikai Chen, Xiangzhong Zheng, Xiaohui Nie, Gang Wang, Yong Wu, Fang Zhou, Wenchi Zhang, Kaixin Sui, Dan Pei. **ICSE SEIP 2020**, Seoul, South Korea, May 23-29 2020
- Automatically and Adaptively Identifying Severe Alerts for Online Service Systems. Nengwen Zhao, Panshi Jin, Lixin Wang, Xiaoqin Yang, Rong Liu, Wenchi Zhang, Kaixin Sui, Dan Pei. **INFOCOM 2020**, Beijing, China, Apr 27-30, 2020
- ZeroWall: Detecting Zero-Day Web Attacks through Encoder-Decoder Recurrent Neural Networks. Ruming Tang, Zheng Yang, Zeyan Li, Weibin Meng, Haixin Wang, Qi Li, Yongqian Sun, Dan Pei, Tao Wei, Yanfei Xu, Yan Liu. **INFOCOM 2020**, Beijing, China, Apr 27-30, 2020

Batch Job Run Time Prediction for Auto-Scaling in the Cloud. Minghua Ma, Christopher Zheng, Junjie Chen, Yilin Li, Dan Pei. **CIEMCS 2020** , New York, NY, USA, February 7, 2020.

2019

The Search for Sparse, Robust Neural Networks. Justin Cosentino*, Federico Zaiter*, Dan Pei, Jun Zhu. **SRDM 2020** , Vancouver, British Columbia, Canada, December 13th, 2019.

FluxRank: A Widely-Deployable Framework to Automatically Localizing Root Cause Machines for Software Service Failure Mitigation. Ping Liu, Yu Chen, Xiaohui Nie, Jing Zhu, Shenglin Zhang, Kaixin Sui, Ming Zhang, Dan Pei. **ISSRE 2019**, Berlin, Germany, Oct 28-31, 2019

Generic and Robust Localization of Multi-Dimensional Root Causes. Zeyan Li, Chengyang Luo, Yiwei Zhao, Yongqian Sun, Kaixin Sui, Xiping Wang, Dapeng Liu, Xing Jin, Qi Wang and Dan Pei. **ISSRE 2019**, Berlin, Germany, Oct 28-31, 2019

Walking without Friends: Publishing Anonymized Trajectory Dataset without Leaking Social Relationships. Kai Zhao, Zhen Tu, Fengli Xu, Yong Li, Pengyu Zhang, Dan Pei, Li Su, Depeng Jin. **IEEE TNSM (IEEE Transactions on Network and Service Management)**

Collaborative Learning of Human Behavior: An Empirical Study on Location Prediction. Yan Lu, Yuanchao Shu, Xu Tan, Yunxin Liu, Mengyu Zhou, Qi Chen, Dan Pei. **SEC 2019** (The Fourth ACM/IEEE Symposium on Edge Computing), Washington DC, November 7-9, 2019

Personalized Context-aware Re-ranking for E-commerce Recommender Systems. Changhua Pei, Yi Zhang, Yongfeng Zhang, Fei Sun, Xiao Lin, Hanxiao Sun, Jian Wu, Peng Jiang, Wenwu Ou, Dan Pei. **RecSys 2019**, Copenhagen, Denmark, September 16-20, 2019.

LogAnomaly: Unsupervised Detection of Sequential and Quantitative Anomalies in Unstructured Logs. Weibin Meng, Ying Liu, Yichen Zhu, Shenglin Zhang, Dan Pei, Yuqing Liu, Yihao Chen, Ruizhi Zhang, Shimin Tao, Pei Sun, Rong Zhou. **IJCAI 2019**, Macao, China, August 10-16 2019.

Robust Anomaly Detection for Multivariate Time Series through Stochastic Recurrent Neural Network. Ya Su, Youjian Zhao, Chenhao Niu, Rong Liu, Wei Sun, Dan Pei. **KDD 2019**, Anchorage, Alaska, USA, August 4 – 8 2019

Automatic and Generic Periodicity Adaptation for KPI Anomaly Detection. Nengwen Zhao, Jing Zhu, Yao Wang, Minghua Ma, Wenchi Zhang, Dapeng Liu, Ming Zhang, Dan Pei. **IEEE TNSM (IEEE Transactions on Network and Service Management), 2019**, Volume: 16, Issue: 3, Sept. 2019, Page(s): 1170 – 1183

CoFlux: Robustly Correlating KPIs by Fluctuations for Service Troubleshooting. Ya Su, Youjian Zhao, Wentao Xia, Rong Liu, Jiabao Bu, Jing Zhu, Yuanpu Cao, Haibin Li, Chenhao Niu, Yiyin Zhang, Zhaogang Wang, Dan Pei. **IWQOS 2019**, Phoenix, Arizona, USA, June 24-25 2019

Causal Analysis of the Unsatisfying Experience in Realtime Mobile Multiplayer Games in

the Wild. Yuan Meng, Shenglin Zhang, Zijie Ye, Benliang Wang, Zhi Wang, Yongqian Sun, Xitong Liu, Shuai Yang, Dan Pei. **ICME 2019**, Shanghai, China, July 8-12, 2019

Dynamic TCP Initial Windows and Congestion Control Schemes through Reinforcement Learning. Xiaohui Nie, Youjian Zhao, Zhihan li, Guo Chen, Kaixin Sui, Jiyang Zhang, Zijie Ye, Dan Pei. **JSAC 2019**, Artificial Intelligence and Machine Learning for Networking and Communications

Unsupervised Anomaly Detection for Intricate KPIs via Adversarial Training of VAE. Wenxiao Chen, Haowen Xu, Zeyan Li, Dan Pei, Jie Chen, Hong Lin, Yang Feng, Zhaogang Wang. **INFOCOM 2019**, Paris, France, April 29-May 2, 2019.

Label-Less: A Semi-automatic Labelling Tool for KPI Anomalies Nengwen Zhao, Jing Zhu, Rong Liu, Dapeng Liu, Ming Zhang, Dan Pei **INFOCOM 2019**, Paris, France, April 29 – May 2, 2019.

基于聚类的多维数据热点发现算法, 邹磊, 朱晶, 聂晓辉, 苏亚, 裴丹, 孙宇, 小型微型计算机系统, 465-471 页, 第 40 卷, 第 3 期, 2019 年 3 月

2018

一种无监督的数据库用户行为异常检测方法, 李海斌, 李琦, 汤汝鸣, 吴珺, 吕志远, 裴丹, 史俊杰, 董旭, 房双德, 杨一飞, 吴焯, 小型微型计算机系统, 第 39 卷, 第 11 期, 2018 年 11 月

Rapid Deployment of Anomaly Detection Models for Large Number of Emerging KPI Streams. Jiahao Bu, Ying Liu, Shenglin Zhang, Weibin Meng, Qitong Liu, Xiaotian Zhu, Dan Pei. **IPCCC 2018**, Orlando, Florida, USA, November 17-19, 2018.

The Frame Latency of Personalized Livestreaming Can Be Significantly Slowed Down by WiFi. Guoshun Nan, Xiuquan Qiao, Jiting Wang, Zeyan Li, Jiahao Nu, Mengyu Zhou, Changhua Pei, Dan Pei. **IPCCC 2018**, Orlando, Florida, USA, November 17-19, 2018.

Robust and Unsupervised KPI Anomaly Detection Based on Conditional Variational Autoencoder. Zeyan Li, Wenxiao Chen, Dan Pei. **IPCCC 2018**, Orlando, Florida, USA, November 17-19, 2018.

Robust and Rapid Adaption for Concept Drift in Software System Anomaly Detection Minghua Ma, Shenglin Zhang, Dan Pei, Xin Huang, Hongwei Dai **ISSRE 2018, Best Paper**, Memphis, TN, USA, October 15-18, 2018.

The DevOps Lab Platform for Managing Diversified Projects in Educating Agile Software Engineering. Xiaoying Bai; Dan Pei; Mingjie Li; Shanshan Li 2018 IEEE Frontiers in Education Conference (**FIE**). San Jose, CA, Oct 3 – Oct 6, 2018.

Reducing Web Latency through Dynamically Setting TCP Initial Window with Reinforcement Learning. Xiaohui Nie, Youjian Zhao, Dan Pei, Guo Chen, Kaixin Sui, Jiyang Zhang. **IWQoS 2018**, Banff, Alberta, Canada, June 4-6, 2018.

Robust and Rapid Clustering of KPIs for Large-Scale Anomaly Detection. Zhihan Li, Youjian Zhao, Rong Liu, Dan Pei. **IWQoS 2018**, Banff, Alberta, Canada, June 4-6,

2018.

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