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RESEARCH INTERESTS

- Big Data Platforms and Applied AI & Machine Learning
- Analysis of Time Series and Unstructured Data with applications to Financial Services
- Cloud Computing and Service Management

EDUCATION

- Ph.D.** in Computer Science, University of California, Los Angeles 2002-2005
Dissertation: “Enterprise Wireless Access Networks: Systems and Applications”
Committee: Professors Songwu Lu (Chair), Lixia Zhang, Mario Gerla, Rajit Gadh
- M.Sc.** in Computer Science, University of California, Los Angeles 2000-2002
- B.Eng.** in Electrical Computer Engineering, National Tech. Univ. Athens, Greece 1994-1999
Thesis: “Design and implementation of a software system for accessing a database using a web browser”
Advisor: Professor Timos Sellis

PROFESSIONAL EXPERIENCE

Principal Research Staff Member & Research Manager

Yorktown Heights, New York

IBM T.J. Watson Research Center Next Generation Applications Group

08/2013–present

Basic and applied research in BigData platforms and applied AI & machine learning, time series and text analytics for Financial Services and cloud service management, leading a team of 7 research staff members and senior software engineers in the Next Generation Applications group at IBM Research. Technical lead of research and development projects, delivering proof-of-concepts with IBM clients, and joint development projects with IBM business units and technology partners. Conducting technology transfers to IBM’s products and services, which have been commercialized through the IBM Cloud & AI, IBM Watson, IBM Finance and IBM Global Markets business units and received multiple IBM awards. Delivered presentations and demos to senior IBM executives, including to former IBM CEO Ginni Rometty and current IBM CEO Arvind Krishna. Highlights of achievements include:

- Designated IBM Master Inventor (filed over 45 patents with 27 granted worldwide), and published 60 papers in major international conferences and journals that have received *5,000 citations* to date and 2 Best Application Paper Awards.

(Google Scholar: https://scholar.google.com/citations?user=IaB4_j0AAAAJ&hl=en)

- Led the development and technology transfer and productization of “High Performance Software Library for Streaming Predictive Analytics on Time Series Data” to IBM Cloud & AI, InfoSphere Streams product, Time Series Analysis Toolkit (v3.2 GA Oct 2013, v4 GA Oct. 2019).

[http://www.ibm.com/support/knowledgecenter/SSCRJU_4.0.1/com.ibm.streams.toolkits.doc/doc/tk\\$com.ibm.streams.timeseries/tk\\$com.ibm.streams.timeseries.html](http://www.ibm.com/support/knowledgecenter/SSCRJU_4.0.1/com.ibm.streams.toolkits.doc/doc/tk$com.ibm.streams.timeseries/tk$com.ibm.streams.timeseries.html)

- Led the development, technology transfer and productization of “BlueHound Regulation Analysis Cognitive Service” to IBM Watson Financial Services Regulatory Compliance Analytics product (GA in Jun 2016). Technology transfer to IBM Watson Compare & Comply cognitive service (GA Dec. 2018)

<https://www.ibm.com/marketplace/cloud/regulatory-compliance-management/id/en-id>
and: <https://www.ibm.com/cloud/compare-and-comply>

- Led the development and technology transfer of “High Performance Software Library for Embedded Predictive Analytics on Time series Data for Internet-of-Things” to IBM Watson IoT, Edge Analytics Agent (GA Dec. 2016).
- Led the development, technology transfer of “High Performance Software Library for Streaming Predictive Analytics on Time series Data for Performance Management” to IBM Cloud Operations Analytics Predictive Insights (v1.3.3 GA Sep. 2015, v1.3.5 GA Oct. 2016).
<https://developer.ibm.com/itoa/videos/predictive-insights-forecasting/>
- Led the development, technology transfer and productization of “Secure Distributed File System for Data-at-Rest Security for Hadoop” to IBM Cloud Infrastructure for Analytics team (GA Oct. 2015)

Research Staff Member

IBM T.J. Watson Research Center

Yorktown Heights, New York

12/2007–07/2013

Basic and applied research in network and service management, network analytics and wireless sensor networks, as member of the Network Management Research group at IBM T.J. Watson Research Center. Technical lead and core developer of analytics for network performance monitoring, and spatio-temporal analytics.

- Tech lead, core development, and technology transfer of “High Performance Software Library for Streaming Predictive Analytics on Time series Data” to IBM Analytics, InfoSphere Streams product, Time Series Analysis Toolkit for Streams (v3.0 GA Nov. 2012).
- Core development and technology transfer of “Spatio-Temporal Analytics Toolkit” to InfoSphere Streams, GeoSpatial Toolkit (GA in Nov. 2012), IBM BigInsights spatial functions in BigSheets (GAed in 2015).
- Tech lead and technology transfer of “Policy-enablement technology for GaianDB” to IBM Emerging Technologies Group, UK, 2010.
(available as PolicyPlugin in IBM GaianDB: <https://github.com/gaiandb/gaiandb>)
- Core analysis and delivery to IBM Strategy Team competition analysis on “Wireless Ecosystem Study”, in collaboration with IBM Corporate Strategy and IBM VC Group in 2010.
- IBM Research Client Advocate for a major cellular network services provider in the USA, 2012-2013.

Senior Research Scientist

Deutsche Telekom Laboratories

Berlin, Germany

10/2005–10/2007

Basic and applied research in wireless networks and distributed systems as member of the Strategic Research Group of Deutsche Telekom Laboratories, the corporate R&D unit of the integrated telecommunications operator Deutsche Telekom Group (T-Mobile/T-Systems/T-Online/T-Com). Technical lead in research and development projects that led to pilot deployments in Germany and produced several top conference publications and patent applications. Instrumental in securing funding and service as scientific advisor to R&D projects for technology transfer to business units.

Research Intern

International Computer Science Institute

Berkeley, California

UC Berkeley

06/2002–09/2002

Performance evaluation, design and development of an adaptive scheduler for the forwarding engine of the Click Modular Router (eXtensible Open Router Platform Project, <http://www.xorp.org>). Software released in version 1.3 of the “Click” router (<http://pdos.lcs.mit.edu/click>).

Supervisors: Dr. Mark Handley, Dr. Eddie Kohler

Software Engineer

Athens, Greece

Design and development of a network server for the printing subsystem of one of the biggest financial institutions in Greece. Used by employees of the bank in remote branches for printing reports on historical data (<http://www.unisystems.gr>).

UniSystems S.A.

03/2000–06/2000

Systems and Network Engineer

Athens, Greece

Feasibility study, specifications analysis, network design and planning of the servers that provide Web Caching Services and Content Control, for the educational network of Greece (network that connects all the high schools of Greece –<http://www.edu-net.gr>), on Unix platforms.

EDUCational NETwork of Greece**University of Aegean**

01/2000 –06/2000

Systems and Network Engineer

Athens, Greece

Information Services (web/ftp/cache/news/mirrors) administration for the campus network of the National Technical University of Athens (<http://noc.ntua.gr>), and Gr-Net, the backbone network of Greek universities and scientific institutes that provides Internet connectivity to more than 200,000 academic and research staff (<http://www.grnet.gr>). Design and implementation of the backend database schema and database software used in the automated Network Operations Platform of the Network Management Center.

Network Management Center**National Technical University of Athens****and****Greek Research and Technology Network**

03/1999–03/2000

Software Engineer Intern

Athens, Greece

Design and development of project tracking software, in Visual Basic and Excel. Design and development of software for customer management in Visual Basic and Access. Administration of a LAN consisting of MS Windows 95 and NT computers.

Unisys Hellas S.A.

Summers of 1996 and 1997

ACADEMIC EXPERIENCE

Research Assistant

Los Angeles, California

Wireless Networking Group (WiNG). Conducted research in the field of mobile systems, wireless networks, distributed computing and Internet technologies. Several conference and journal publications, two patent applications and a RFC resulted from this work.

UCLA Computer Science Department

10/2000–09/2005

Teaching Assistant

University of California, Los Angeles

Teaching Assistant for the Course CS111 - Operating Systems.

Computer Science Department

01/2004–03/2004

Teaching Assistant

National Tech. Univ. Athens, Greece

Teaching Assistant for the Course 3.4.26.7 - Database Systems.

Department of Electrical & Computer Engineering

03/2000–06/2000

HONORS & AWARDS

1. **IBM Corporation** 2020
Outstanding Technical Achievement Award for “Time Series Analytics Library”
2. **IEEE International Conference on BigData** 2019
Best Application Paper Award for “seq2graph: Discovering Dynamic Non-linear Dependencies from Multivariate Time Series”

3. **IBM Research** 2018
Research Division Award for “Research Contributions to Sensor Service Management and Composition”
4. **IBM Corporation** 2016
Outstanding Technical Achievement Award for “Research Contributions to Network Aware Virtual Machine Migration”
5. **IBM Corporation** 2016
Designated IBM Master Inventor for significant contributions to IBM’s intellectual property.
6. **IEEE International Conference on BigData** 2016
Best Application Paper Award for “Data-at-Rest Security for Apache Spark”
7. **IBM Research** 2015
Research Division Award for “Research Contributions to Spatiotemporal Analytics on BigData Platforms”
8. **IBM Research** 2015
Research Division Award for “Network Analytics from Call Data Records”
9. **IBM Research - Next Generation Computing Systems** 2013
Eminence and Excellence Award for “Initiative and Leadership in Research Presence at IBM Pulse 2013”
10. **Dimitris Chorafas Foundation** 2004-2005
Chorafas Prize for research and academic excellence.
11. **Propondis Foundation** 2002-2004
Graduate Student Fellowship covering a monthly stipend over 2 years. Awarded for research and academic excellence.
12. **Technical Chamber of Greece** 1997-1998
Honorary Distinction (with financial award) for academic excellence.
13. **National Institution of Scholarships, Greece** 1997-1998
Academic Honor (with financial award) for academic excellence.
14. **Nikolaos Trataros Foundation** 1994
Scholarship for the admission at the National Technical University of Athens.

PROFESSIONAL ACTIVITIES

Leadership and Expert Positions

- *Steering Committee (founding member)*, the 9th EAI International Conference on Mobile Computing, Applications, and Services (EAI MobiCASE), 2010-2020, <http://mobicase.org/>
- *Associate Editor*, ACM/Springer Wireless Networks Journal, 2010-2011
- *Guest Editor*: ACM/Springer Mobile Networks and Applications (MONET) Journal, Special Issue on Advances in Mobile Applications and Provisioned Services, summer 2011
- *Reviewer for Government of Hong Kong*, Engineering Research Center for Science and Technology BigData Service, 2015
- *Reviewer for NSF* Global Environment for Network Innovations (GENI) Project (2013-2014, 2009-2010)
- *Founding General Co-chair*, ICST 1st International Conference on Mobile Computing, Applications, and Services (MobiCASE), Oct. 2009
- *IETF Co-Editor* and member of design team: Internet Engineering Task Force, CAPWAP working group, 02/2004 - 02/2005

Program Committees

- Program committee member: The 24th Pacific Asia Conference on Knowledge Discovery and Data Mining (PA-KDD) 2020, *recognized in Honor Roll of Outstanding Reviewers*, <https://www.pakdd2020.org/programcommittee.html>
- Program committee member: the 28th and 29th IEEE International Conference on Computer Communications (IEEE INFOCOM) 2009, 2010, 2011, 2012, 2013
- Program committee member: ACM Workshop on Mobile Internet Through Cellular Networks: Operations, Challenges and Solutions (MICNET) in conjunction with ACM MobiCom Conference'09, 2009
- Program committee member: IEEE Workshop on Network Measurements (WNM), in conjunction with the IEEE LCN conference, 2006, 2007, 2008, 2009
- Program committee member: The 4th International Conference on Networking and Services (ICNS) 2008
- Program committee member: The 4th International Conference on Testbeds and Research Infrastructures for the Development of Networks & Communities (IEEE/CreateNet TridentCom 2008)
- Program chair: 2nd International Workshop on Internet Packet Dynamics (IPDy) 2007
- Session chair: 1st IEEE Workshop on Operator-assisted (Wireless Mesh) Community Networks (OpComm), Sep. '06
- Reviewer for Transactions on Wireless Comms. '09, Trans. on Computers '09, Wireless Networks Journal'09, Concurrency Journal '09, Infocom'07, ICC'06, JSAC'06, MASS'06, MC2R'06, TMC'06, ToN'06, WTC'06, EuroNGI'06, Handbook of Computer Networks
- External reviewer for VTC'05, JSAC'04, MOBICOM'04, MOBICOM'02, JNSM'02, ICNP'01
- Member of IEEE Computer Society, ACM SIGMOBILE

INTERNS/STUDENTS SUPERVISION

- Doctoral committee member: Syed Yousaf Shah, Ph.D. at Computer Science Department of Rensselaer Polytechnic Institute (RPI), 2015
- Doctoral committee member: Nathanael Thompson, Ph.D. at Computer Science department of University of Illinois at Urbana-Champaign, 2010
- Interns at IBM T.J. Watson Research Center: Yunqi Guo (Ph.D. Candidate, University of California, Los Angeles (UCLA), CA, USA), Bhavik Shah (B.Eng. Cornell University, Ithaca, NY), Zengwen Yuan (Ph.D. candidate, University of California, Los Angeles (UCLA), CA, USA), Ioannis Mytilinis (Ph.D. candidate, National Technical University of Athens (NTUA), Greece), Christos Parizas (Ph.D. candidate, Cardiff University, UK), Guan-Hua Tu (Ph.D. Candidate at UCLA, CA, USA), Yousaf Shah (Ph.D. Candidate at Rensselaer Polytechnic Institute, NY, USA), Vivek V Shrivastava (Ph.D. candidate, University of Wisconsin-Madison, WI, USA), Sahin Geyik (Ph.D. student, Rensselaer Polytechnic Institute, NY, USA), Nikollela Sofra (Ph.D. candidate, Imperial College, London, UK)
- Interns at DT Laboratories: Nathanael Thompson (Ph.D. candidate, UIUC, IL, USA), Walid Jerbi (M.Eng. candidate, Technical University of Berlin, Germany), Robert Sombrutzki (M.Eng. candidate, Humboldt University, Germany)
- Students at UCLA: Jerry Cheng (junior Ph.D. student), Gary Zhong (M.Sc.), Vidyut Samanta (M.Sc.), Ning Wang (M.Sc.)
- Several project teams from courses at UCLA: CS211 "Protocol and Systems Design for Wireless and Mobile Networks", and CS219 "Wireless Networking and Mobile Computing"

ADDITIONAL TRAINING

- DevOps 1-week workshop for DevOps practices, tools, and workflows, sponsored by IBM Research, Aug. 2017
- MicroMBA 1-week course, teaching key concepts of finance, accounting, strategy, and marketing. Sponsored by IBM Research, USA, Jul. 2012
- Training course on project management that satisfies the requirements for the Project Management Professional (PMP) certification of the Project Management Institute in US. Sponsored by Deutsche Telekom Laboratories, Berlin, Germany, Jul. 2006.

COMPUTER SKILLS

Programming Languages:	Java, Javascript/Typescript/node.js, R Statistical Package, Perl, Visual Basic, Web Application Programming (Frontend: Angular5, HTML, jQuery, XML/JSON, Backend: Java/Jersey/Jackson/JPA).
Cloud Environments:	IBM Cloud/BlueMix, Google Cloud Platform, Google App Engine, Docker, VMware Management Tools
Development Environments:	Eclipse (Git/Maven/Jenkins), WebStorm, Cognos Real-Time Dashboards, Apache UIMA (Unstructured Information Management Architecture for text analytics), Apache libraries, Embedded Router Development in Texas Instruments NSP, OpenWRT.
Databases/BigData Platforms:	Hadoop, Spark, DB2, Oracle, noSQL DBs (MongoDB, Google Datastore), MySQL.
Operating Systems:	Mac OS X, Windows, Unix/Linux (kernel programming), Sun OS/Solaris, FreeBSD.

LANGUAGES

- Greek (Native), English (Excellent)

PUBLICATIONS

1. X-H. Dang, S.Y. Shah, P. Zerfos, “The Squawk Bot: Joint Learning of Time Series and Text Data Modalities for Automated Financial Information Filtering”, in proceedings of *29th International Joint Conference in Artificial Intelligence (IJCAI-PRICAI 2020)*, Special Track on “AI for FinTech”, Yokohama, Japan, Jun. 2020 (to appear)
2. X-H. Dang, S.Y. Shah, P. Zerfos, “seq2graph: Discovering Dynamic Non-linear Dependencies from Multivariate Time Series”, in proceedings of *IEEE International Conference on BigData*, 2019, received the **Best Application Paper Award**
3. S.Y. Shah, X-H. Dang, P. Zerfos, “Root Cause Detection using Dynamic Dependency Graphs from Time Series Data”, in proceedings of *IEEE International Conference on BigData*, 2018
4. X-H. Dang, R. Akella, S. Bahrami, V. Sheinin, P. Zerfos, “4. Unsupervised Learning Techniques to Analyze and Understand Sentence Elements”, in proceedings of *IEEE International Conference on BigData*, 2018
5. S.Y. Shah, Z. Yuan, S. Lu, P. Zerfos, “Dependency analysis of cloud applications for performance monitoring using recurrent neural networks”, in proceedings of *IEEE International Conference on BigData*, 2017
6. Y. Kim, P. Zerfos, V. Sheinin, N. Greco “Ranking the importance of ontology concepts using document summarization techniques”, in proceedings of *IEEE International Conference on BigData*, 2017
7. S. Shah, B. Paulovicks, P. Zerfos, “Data-at-Rest Security for Apache Spark”, in proceedings of *IEEE International Conference on BigData*, 2016, received the **Best Application Paper Award**
8. R. Ganti, D. Agrawal, M. Srivatsa, P. Zerfos, “MP-trie: Fast Spatial Queries on Moving Objects”, in proceedings of *in ACM Middleware*, 2016
9. S. Shah, B. Szymanski, P. Zerfos, C. Gibson, “Towards Relevancy Aware Service Oriented Systems in WSNs”, in *IEEE Transactions on Services Computing*, 304-316, 2016
10. P. Zerfos, H. Yeo, B. Paulovicks, V. Sheinin, “SDFS: Secure Distributed File System for Data-at-Rest Security for Hadoop-as-a-Service”, in *IEEE International Conference on BigData*, Oct. 2015
11. C. Parizas, D. Pizzocaro, A. Preece, P. Zerfos, “Sharing Policies for Multi-Partner Asset Management in Smart Environments”, in *IEEE Network Operations and Management Symposium (NOMS)*, 2014
12. C. Parizas, D. Pizzocaro, A. Preece, P. Zerfos, “Sharing Smart Environment Assets in Dynamic Multi-Partner Scenarios”, in *IEEE Network Operations and Management Symposium (NOMS)*, 2014
13. P. Zerfos, M. Srivatsa, H. Yu, H. Franke, D. Agrawal, “Platform and Applications for Massive-Scale Streaming Network Analytics”, in *IBM R&D Journal*, May. 2013
14. S.Y. Shah, B. Szymanski, P. Zerfos, C. Bisdikian, C. Gibson, D. Harries, “Autonomous Configuration of Spatially Aware Sensor Services in Service-Oriented WSNs”, in *IEEE International Conference on Pervasive Computing and Communications Workshops, PERCOM*, Mar. 2013
15. S.C. Geyik, B. Szymanski, P. Zerfos, “Robust Dynamic Service Composition in Sensor Networks”, in *IEEE Transactions on Services Computing*, 2013
16. C. Parizas, D. Pizzocaro, A. Preece, P. Zerfos, “Managing ISR Sharing Policies at the Network Edge Using Controlled English”, in *SPIE Defense, Security, and Sensing*, 2013
17. S.Y. Shah, B. Szymanski, P. Zerfos, M. Srivatsa, C. Gibson, D. Harries, “Policy Enabled Real Time Information Flow Control Across Multiple Administrative Domains”, in *proc. of ACITA* 2013

18. S. Geyik, B. Szymanski, P. Zerfos, "Dynamic Service Composition in Sensor Networks", to appear in *IEEE Transactions on Services Computing Journal*, 2012
19. S. Geyik, Y. Shah, B. Szymanski, S. Das, P. Zerfos, "Market Mechanisms for Resource Allocation in Pervasive and Mobile Applications", in *Elsevier Pervasive and Mobile Computing Journal 2012*, Fast Track from IQ2S 2011 (invited)
20. Zerfos et. al., "Policy-Aware Service Composition in Sensor Networks", in Proc. of *IEEE SCC 2012*, Jun. 2012
21. T. Phan, R. Montanari, P. Zerfos: "Editorial SI: Mobile Applications and Services", in *ACM/Springer MONET Journal* 17(2): 161-162 (2012)
22. Geyik, Szymanski, Zerfos, Mowshowitz, "Sensor Service Selection through Switch Options", in Proc. of *IEEE SCC*, Jun. 2011 (also in ACITA 2011)
23. Bourdenas, Wood, Zerfos, Bergamaschi, Swami, Sloman, "Self Adaptive Routing in Multi-hop Sensor Networks", in Proc. of *ACM/IEEE International Conference on Network and Service Management (CNSM)* 2011
24. T. Bourdenas, F. Bergamaschi, D. Wood, Petros Zerfos, M Sloman, "Forecasting routes and self-adaptation in multi-hop wireless sensor networks", in proceedings of *Proc. SPIE 8047, Ground/Air Multisensor Interoperability, Integration, and Networking for Persistent ISR II, 80470V*, May 2011
25. V. Shrivastava, P. Zerfos, K-W. Lee, H. Jamjoom, Y-H Liu, S. Banerjee, "Application-Aware Virtual Machine Migration in Data Centers", in Proc. of *IEEE Infocom Conference*, Apr. 2011
26. B. Szymanski, Y. Shah, S. Geyik, S. Das, M. Chhabra, P. Zerfos, "Market Mechanisms for Value of Information Driven Resource Allocation In Sensor Networks", in *3rd International Workshop on Information Quality and QoS for Pervasive Computing (I2QS)*, in conjunction with *PERCOM*, 2011
27. S. Geyik, B. Szymanski, P. Zerfos, A. Mowshowitz, "Sensor Service Selection through Switch Options", in Proc. of ACITA 2011
28. T. Phan, R. Montanari, P. Zerfos: "Mobile Computing, Applications, and Services - First International ICST Conference, MobiCASE", San Diego, CA, USA, October 26-29, 2009, **book proceedings Revised Selected Papers Springer**, 2010, <https://www.springer.com/gp/book/9783642126062>
29. Sahin Cem Geyik, Boleslaw K. Szymanski, Petros Zerfos, Dinesh Verma, "Dynamic Composition of Services in Sensor Networks", in *IEEE International Conference on Services Computing (SCC)*, Jun. 2010
30. Petros Zerfos, Hani Jamjoom, Yew Huey Liu, Kang-Won Lee, Vivek Shrivastava, "Using Application Dependencies for Workload Migration Decisions in Cloud Data center Environments", in *INFORMS 2010 Annual Meeting*, Nov. 2010
31. John Ibbotson, Christopher Gibson, Joel Wright, Peter Waggett, Petros Zerfos, Boleslaw Szymanski, David Thornley, "Sensors as a Service Oriented Architecture: Middleware for Sensor Networks", in *IEEE Intelligent Environments (IE) Conference*, 2010
32. G. Bent, D. Vyvyan, David Wood, Petros Zerfos, Seraphin Calo, "Distributed policy based access to networked heterogeneous ISR data sources", in Proc. *SPIE Conference* 2010
33. Sahin Geyik, Boleslaw Szymanski, Petros Zerfos, Dinesh Verma, Joel Wright, Christopher Gibson, Caleb Vincent, "Dynamic Composition of Services in Sensor Networks and Its Implementation under Sensor Fabric", in Proc. *ACITA 2010*, Sep. 2010
34. M. Beigi, S. Calo, D. Wood, P. Zerfos, "Policy Technologies for Federation and Interoperation of Coalition Networks", forthcoming book chapter in *Network Science for Military Coalition Operations: Information Extraction and Interactions*, edited by Dr. Dinesh Verma, IGI-Global Publishers, 2010 (to appear)

35. S. Calo, D. Wood, P. Zerfos, D. Vyvyan, P. Dantressangle, G. Bent, "Technologies for Federation and Interoperation of Coalition Networks", in *12th International Conference on Information Fusion*, Jul. 2009
36. M. Meisel, V. Pappas, P. Zerfos, L. Zhang, "Emergent Mobile Services", short paper in *Proc. of ACITA'09*, Sep. 2009 (to appear)
37. D. Verma, B.J. Ko, P. Zerfos, K-W. Lee, T. He, M. Duggan, K. Stewart, A. Swami, N. Sofra, "Understanding the Quality of Monitoring for Network Management", in *The Computer Journal*, Oxford University Press, Jun. 2009
38. N. Sofra, T. He, P. Zerfos, B.J. Ko, K-W. Lee, K. Leung, "Accuracy Analysis of Data Aggregation for Network Monitoring", in *IEEE MILCOM*, Nov. 2008
39. D. Verma, B.J. Ko, P. Zerfos, K.W. Lee, M. Duggan, K. Stewart, B. Rivera and A. Swami, "Understanding the Quality of Management in Computer Networks", in *Proc. of ACITA'08*, Sep. 2008
40. Nathanael Thompson, Petros Zerfos, Robert Sombrutzki, Jens-Peter Redlich, Haiyun Luo, "100% Certified Organic: Design and Implementation of Self-Sustaining Wireless Networks", in *ACM HotMobile'08*, Feb. 2008
41. Jerry Cheng, Hao Yang, Starsky H.Y. Wong, Petros Zerfos, Songwu Lu, "Design and Implementation of Cross-Domain Cooperative Firewall", in *IEEE ICNP 2007*, Oct. 2007
42. N. Thomson, Z. Yin, H. Luo, P. Zerfos, J. P. Singh, "Extended Abstract: Authentication on the Edge - Distributed Authentication for a Global Open Wi-Fi Network", *ACM MOBICOM 2007*, Sep. 2007
43. X. Meng, P. Zerfos, V. Samanta, S. H.Y. Wong, S. Lu, "Analysis of the Reliability of a Nationwide Short Message Service", *IEEE INFOCOM 2007*, May 2007
44. P. Zerfos, X. Meng, S. H.Y. Wong, V. Samanta, S. Lu, "A Study of the Short Message Service in a Nationwide Cellular Network", *ACM SIGCOMM Internet Measurement Conference (IMC 2006)*, Oct. 2006
45. M. Solariski, P. Vidales, O. Schneider, P. Zerfos, and J. Singh, "An Experimental Evaluation of Urban Networking using IEEE 802.11 Technology", *1st IEEE Workshop on Operator-Assisted (Wireless Mesh) Community Networks (OpComm 2006)*, Sep. 2006
46. E. Kotsovinos, P. Zerfos, N. M. Piratla, N. Cameron, S. Agarwal, "Jiminy: A Scalable Incentive-based Architecture for Improving Rating Quality", *4th International Conference on Trust Management (iTrust)*, May 2006
47. E. Kotsovinos, P. Zerfos, N. M. Piratla, N. Cameron and W. Jerbi, "Using Jiminy for Run-Time User Classification Based on Rating Behavior", *4th International Conference on Trust Management iTrust 06 (extended abstract and poster)*, May 2006
48. R. Karrer, P. Zerfos and N. Piratla, "Magnets - A Next Generation Access Network", *IEEE INFOCOM 2006 (extended abstract and poster)*, April 2006
49. V. Samanta, R. Oliveira, A. Dixit, P. Aghera, P. Zerfos, S. Lu, "Impact of Video Encoding Parameters on Dynamic Video Transcoding", *1st Communication Systems Software and Middleware Conference, (COMSWARE)*, Jan. 2006
50. Architecture Taxonomy for Control and Provisioning of Wireless Access Points (CAPWAP), L. Yang, P. Zerfos, E. Sadot, Internet Engineering Task Force, **IETF RFC 4118**, Jun. 2005
51. A. Ntoulas, P. Zerfos, J. Cho, "Downloading Textual Hidden Web Content through Keyword Queries", *ACM/IEEE Joint Conference on Digital Libraries*, Jun. 2005
52. P. Zerfos, G. Zhong, S. Lu, "A Software Support Infrastructure for Wireless Access Routers", *IEEE Journal on Selected Areas in Communications*, Mar. 2005
53. Z. Fu, H. Luo, P. Zerfos, S. Lu, L. Zhang, M. Gerla, "The Impact of Multihop Wireless Channel on TCP Performance, *IEEE Transactions on Mobile Computing*, 2004

54. P. Zerfos, G. Zhong, J. Cheng, H. Luo, S. Lu, J. Li, "DIRAC: A Software-based Wireless Router System", in *ACM MOBICOM 2003*, Sep. 2003
55. S. Lu, H. Yang, H. Luo, P. Zerfos, Y. Fan, J. Kong, "Security in Mobile Ad hoc Networks", *Handbook of Mobile Computing, I. Mahgoub, M. Ilyas (eds.), CRC press*, Dec. 2003
56. H. Luo, J. Kong, P. Zerfos, S. Lu, L. Zhang, "URSA: Ubiquitous and Robust Access Control for Mobile Ad hoc Networks", *Transactions on Networking*, 2003
57. Z. Fu, P. Zerfos, H. Luo, S. Lu, L. Zhang, M. Gerla, "The Impact of Multihop Wireless Channel on TCP Throughput and Loss", *IEEE INFOCOM 2003*, Mar. 2003
58. H. Luo, P. Zerfos, J. Kong, S. Lu, L. Zhang, "Self Securing Ad hoc Networks", *7th IEEE International Symposium on Computers and Communications (ISCC)*, Jun. 2002
59. J. Kong, P. Zerfos, H. Luo, S. Lu, L. Zhang, "Providing Robust and Ubiquitous Security Support for Mobile Ad hoc Networks", *9th IEEE International Conference on Network Protocols (ICNP)*, Nov. 2001

PATENTS

Granted

1. Consumer and business anti-counterfeiting services using identification tags, JO Plouchart, W. Chong, AV Garcia, P. Zerfos, US Patent 10,476,887, awarded to *IBM Corporation*, Nov. 11th, 2019
2. Enabling Secure Big Data Analytics in the Cloud, P. Zerfos, B. Paulovicks, V. Sheinin, US Patent 10,410,011, awarded to *IBM Corporation*, Sep. 9th, 2019
3. Information sharing for third party applications in cellular telecommunications infrastructure, P. Zerfos, D.Agrawal, J.Ziskin, M.Hill, D.Verma, M. Srivatsa, S. Lee, US Patent 10,389,724 awarded to *IBM*, Aug. 19th, 2019
4. State Migration of Edge-of-Network Applications, P. Zerfos, C. Bisdikian, D. Agrawal, D. Verma, US Patent 10,172,064, awarded to *IBM*, Jan. 1st, 2019
5. Robust and Readily Domain-Adaptable Natural Language Interface to Databases, B. Boguarev, E. Khorasani, S. Patwardhan, V. Sheinin, P. Zerfos, US Patent 10,042,921, awarded to *IBM Corporation*, Aug. 6th, 2018
6. Natural Language Interface to Databases, B. Boguarev, E. Khorasani, S. Patwardhan, V. Sheinin, P. Zerfos, US Patent 9,959,311, awarded to *IBM Corporation*, Apr. 30th, 2018
7. Enabling Secure Big Data Analytics in the Cloud, P. Zerfos, B. Paulovicks, V. Sheinin, US Patent 9,934,395, awarded to *IBM Corporation*, Apr. 2nd, 2018
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9. Predictive Placement of Content through Network Analysis, Petros Zerfos, Dakshi Agrawal, Vasileios Pappas, Jorge Lobo, Germany Patent 112012001557.6, awarded to *IBM*, June 7th, 2017
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11. Smart Online Services Presence in a Cellular Network, P. Zerfos, C. Bisdikian, D. Agrawal, D. Verma, US Patent 9,654,896, awarded to *IBM Corporation*, May 16th, 2017
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18. Predictive Placement of Content through Network Analysis, Petros Zerfos, Dakshi Agrawal, Vasileios Pappas, Jorge Lobo, US Patent 9,037,700 awarded to *IBM*, May 19th, 2015
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21. Discoverable Applicability of Dynamically Deployable Software Modules, David Wood, Petros Zerfos, Xiping Wang, Seraphin Calo, US Patent 8,484,246 awarded to *IBM*, Jul 9th, 2013
22. Quality of Service Management of End-User Devices in an End-User Network, Petros Zerfos, Joel Branch, Kang-won Lee, Dakshi Agrawal, US Patent 8,495,428 awarded to *IBM*, Jul. 23rd, 2013
23. A method for network-aware virtual machine migration in data centers, Petros Zerfos, Kang-won Lee, Hani Jamjoom, Vivek Shrivastava, US Patent 8,423,646, awarded to *IBM Corporation*, April 16th, 2013
24. Method and System for Distributed, Localized Authentication in the Framework of 802.11i, Petros Zerfos, Jatinder Singh, Marcin Solarski, Pablo Vidales, Nathanael Thompson, Haiyun Luo, US Patent 8,307,414, awarded to *Deutsche Telekom A.G.*, Nov. 6th, 2012
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1. Model and Method for Time Series Analysis with Stable Interpretation and Uncertainty Estimation, X-H. Dang, S.Y. Shah, P. Zerfos, to be filed, 2020
2. Consumer and business anti-counterfeiting services using identification tags, JO Plouchart, W. Chong, AV Garcia, P. Zerfos, US 20190394213, filed Dec 29th, 2019
3. Dynamic discovery of dependencies among time series using neural networks, X-H. Dang, S. Y. Shah, P. Zerfos, US 20190354836, filed, Nov. 21st, 2019
4. Method and System for Asynchronous and Explainable Information Fusion from Multimodal Data using Recurrent Neural Networks, X-H. Dang, S.Y. Shah, P. Zerfos, filed, Feb 2019
5. Method and Systems for Learning Dependencies of Performance Metrics using Recurrent Neural Networks, P. Zerfos, S. Shah, Z. Yuan, US 20180300621, filed, Oct. 2018

6. Advanced shopping cart with assistive technology, Cliff Pickover, Syed Yousaf Shah, Petros Zerfos, filed, Aug. 2017
7. Method and System for Automatic Code Generation using Cognitive Technologies, S. Shah, P. Zerfos, (rated file), Dec. 2016
8. Geospatial Access Control for Databases/noSQL Stores, R. Ganti, M. Srivatsa, P. Zerfos, D. Pranita, (rated file), Dec. 2016
9. Customer Demographic Information System and Method, P. Zerfos, S. Calo, V. Pappas, D. Verma, filed 2014
10. Fast and Accurate Geo-mapping, P. Zerfos, D. Agrawal, R. Ganti, M. Srivatsa, filed 2014
11. Method for Generating Secure and Highly Available Data for Hadoop Processing, H. Yeo, B. Paulovicks, P. Zerfos, rated published, 2014
12. Fast and Automated ARIMA model initialization, M. Zafer, D. Wood, P. Zerfos, filed 2014
13. Techniques for Policy Aware Service Composition, R. Dilmaghani, J. Lobo, P. Zerfos, K. Gruenberg, S. Calo, filed 2012
14. Customer Demographic Information System and Method, P. Zerfos, V. Pappas, D. Verma, S. Calo, filed, 2015
15. A method for extending application providers network to the cellular edge, Chatschik Bisdikian, Dakshi Agrawal, Dinesh Verma, Petros Zerfos, rated published, 2011
16. A System and Method for Maintaining Time Series Models for IT System Parameters, Dakshi Agrawal, Petros Zerfos, Kang-won Lee, Mudhakar Srivatsa, Kristian Stewart, Matthew Duggan, filed in May 2010
17. Method for Human-Powered Advertisement Selection, Vasileios Pappas, Petros Zerfos, US Application No., USPTO Serial Number: 12/164185, filed Jun. 2008
18. Method and system to trace the IP traffic back to the sender or receiver of user data in public wireless networks, Marcin Solarski, Pablo Vidales, Petros Zerfos, Jatinder Pal Singh, EU Application No. EP07118890.8, Filed in Oct. 2007
19. System and Method for Embedding Content in Web Pages distributed by a Wireless Access Point, Pablo Vidales, Marcin Solarski, Petros Zerfos, Jatinder Singh, EU Application No. EP07118783.5, Filed in Oct. 2007
20. Method and system for detecting a dishonest user in an online rating system, E. Kotsovinos, P. Zerfos, N. M. Piratla, EU Application No. 06009791.2, Filed in May 2006
21. Context sensitive streaming system and method, P. Michael, M. Faloutsos, B. Greenstein, F. Konstantinidis, M. Romesis, P. Zerfos, United States App. No. 20050138077, Filed in June 2005
22. Distributed Router Architecture for the Wireless Internet, P. Zerfos, S. Lu, G. Zhong, Provisional Patent, Filed in Nov. 2003, UCLA Intellectual Property Office

MAJOR PRESENTATIONS, INVITED TALKS & DEMOS

1. “seq2graph: Discovery Dynamic Non-linear Dependencies from Multivariate Time Series”, presentation at IEEE International Conference on BigData 2019, Los Angeles, CA, Dec. 2019 (Best Application Paper Award presentation)
2. “AI for Financial Regulation Compliance Management”, invited talk at *AI Deep Dive* event at Money 20/20 Europe, Amsterdam, Netherlands, Jun. 2018, (along with Jose Manuel Barroso (Chairman, Goldman Sachs International), Manuela Veloso (Prof. of Robotics/ML at Carnegie Mellon University and Head of AI JP Morgan Chase) with a keynote by Steve Wozniak, Apple Co-Founder), <https://feedzai.com/frontiers/money-2020-europe/>

3. Invited panel on “US Treasury AI Day”, organized by MITRE Corporation, Virginia, Apr. 2018, with the theme “AI & Machine Learning to help explore emergent consequences and implications in changes to complex policy frameworks”
4. “BlueHound Automated Ontology Builder”, Demo at Federal Systems Forum, IBM Think 2018 conference, Las Vegas, Nevada, Mar. 2018
5. “Ranking the Importance of Ontology Concepts Using Document Summarization Techniques”, presentation at IEEE International Conference on BigData, Boston, MA, Dec. 2017
6. “Dependency Analysis of Cloud Applications for Performance Monitoring using Recurrent Neural Networks”, presentation at IEEE International Conference on Big Data, Boston, MA, Dec. 2017
7. “Deep Dive into AI for Financial Services”, Real Machine Meetup & The Bay Pay Forum, invited panelist, San Francisco, CA, Mar. 2017
8. “From human decisions to machine decisions: interpretability of machine learning results”, invited talk at RealMachine.AI Summit on Machine Learning in Financial Services, co-located with Money 20/20, <http://www.realmachine.ai>, Las Vegas, NV, Oct. 2016
9. BlueHOUND Cognitive Regulation Analysis Service, demo at IFA Consumer Electronics Unlimited 2016, Berlin, Sep. 2016
10. SDFS: Secure Distributed File System for Data-at-Rest Security for Hadoop-as-a-Service, talk at IEEE BigData Conference, Oct. 2015
11. Data-at-Rest Security for Hadoop-as-a-Service, demo at Gartner CIO Symposium and ITExpo, 2015
12. Data-at-Rest Security for Hadoop-as-a-Service, demo at IBM Interconnect Expo, 2015
13. Data-at-Rest Security for Hadoop-as-a-Service, demo at IBM Insights Expo, 2014
14. Secure Spatiotemporal Analytics with Apache Accumulo on BigInsights, demo at IBM Insights Expo, 2013
15. Predictive and Graph Analytics in Netcool Network Analytics, demo at IBM Pulse 2013, Mar. 2013
16. Autonomous Configuration of Spatially Aware Sensor Services in Service Oriented WSNs, demo at IEEE Pervasive Computing Conference (PerCom), 2013
17. Spatio-Temporal Analytics-based Demographics, demo at the IBM Information-On-Demand Conference, 2012, D. Agrawal, M. Srivatsa, R. Ganti, P. Zerfos Oct. 2012
18. Real-Time Network Analytics Platform, presentation at AT&T Research, May 2012
19. Real-Time Network Analytics Research, presentation at Sprint Labs, Burlingame CA, Mar. 2012 (also given at Sprint Headquarters, in Feb. 2012)
20. Distributed Sensor Service Composition with Spatial Constraints, presentation at ACITA 2012 customer conference, Sep. 2012
21. Policy-Aware Service Composition in Sensor Networks, presentation at IEEE Services Computing Conference, Jun. 2012
22. Service Composition for Services at the Edge of the Network, with IBM-UK, RPI, Selected Demo at ACITA 2012 customer conference, Sep. 2011
23. Edge analytics application prototype for Real-time Data-to-Decisions on the PowerEN, w/ D. Agrawal, M. Srivatsa, demonstration at Nokia-Siemens-Networks, Germany, Aug. 2011
24. Application-aware Virtual Machine Migration in Data Centers, presentation at Infocom 2011, also given at IBM China Research Lab, Apr. 2011
25. Presentation titled “Streaming Predictive Analytics for Performance Management”, at the E2E Network Analytics Information Share Session 2 workshop organized by IBM Global Business Services (Consulting) Telco Practice, BAO Center of Excellence, Feb 2011

26. Predictive Analytics in the IBM Tivoli Netcool Performance Flow Analyzer, IBM Tivoli Pulse 2010 Conference (demonstration), Las Vegas, NV, Feb. 2010
27. An Insider's View of the Short Message Service, invited talk at the Systems Architecture Group, Humboldt University, Jun. 2007, Berlin, Germany
28. A Whirlwind Tour of Open Source Routing Platforms, invited talk at the IST DAIDALOS EU project meeting, Jan. 2006, Aveiro, Portugal
29. A Study of the Short Message Service of a Nationwide Cellular Network, talk at ACM IMC 2006, Oct. 2006 (given by Ricardo Oliveira)
30. E. Kotsovinos, P. Zerfos, N. M. Piratla, N. Cameron and W. Jerbi, Using Jiminy for Run-Time User Classification Based on Rating Behaviour, *4th International Conference on Trust Management iTrust 06 (demo)*, May 2006
31. Downloading Textual Hidden Web Content through Keyword Queries, A. Ntoulas, P. Zerfos, J. Cho, accepted for poster presentation at the 14th International Conference on World Wide Web (WWW 2005), (declined)
32. DIRAC: A Software-based Wireless Router System, invited talk, 58th IETF meeting, Minneapolis, MN, Nov. 2003 (given by Dr. Songwu Lu)
33. DIRAC: A Software-based Wireless Router System, talk at ACM MOBICOM 2003, Sep. 2003
34. DIRAC: A Software-based Wireless Router System, invited talk at Nokia Research Center, Mountain View, CA, Jun. 2003
35. The Policing Wireless Service of DIRAC, demo at the Wireless Internet for the Mobile Enterprise Consortium (WINMEC), UCLA, May 2003
36. Security for Infrastructureless Mobile Networks, poster presentation at the UCLA Computer Science Research Review, Apr. 2001

SOFTWARE

- WatFore: High Performance Library for Streaming Predictive Analytics for Time series (IBM Corporation)
- BlueHound Cognitive Regulation Analysis (IBM Corporation)
- SDFS—Secure Distributed File System for Hadoop (IBM Corporation)
- Spatio-Temporal Analytics Library (IBM Corporation)
- Policy Management Library, available for download from IBM DeveloperWorks, (<https://www.ibm.com/developerworks/community/groups/service/html/communityview?communityUid=ed556565-1d91-4289-94ae-213df1340350>) (IBM Corporation)
- Ubiquitous and Robust Security Architecture (URSA) protocols in ns-2 (released, UCLA)
- Adaptive Scheduler for the Click modular router (released with Dr. Eddie Kohler)
- DIRAC system: router core implementation in Click, router agent on OpenAP access point platform