Spiridon Bakiras

Curriculum Vitae

Division of Information and Computing Technology

College of Science and Engineering

Hamad Bin Khalifa University

P.O. Box 34110, Doha, Qatar

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EDUCATION

1996 – 2000 Ph.D. in Electrical Engineering, University of Southern California, Los	5 – 2000 Ph.D. in Electr	al Engineering	. University of Southe	rn California. Los Ange	eles. CA. USA.
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Dissertation: Real-time traffic transmission over packet-switched networks

Advisor: Professor Victor O.K. Li

1993 – 1994 M.Sc. in Telematics, University of Surrey, Guildford, UK.

1988 – 1993 **Diploma in Electrical and Computer Engineering**, *National Technical University of Athens, Athens,*

Greece.

Work Experience

2016 - present Associate Professor, College of Science and Engineering, Hamad Bin Khalifa University.

2015 – 2016 **Associate Professor**, *Dept. of Computer Science*, Michigan Technological University. Director of the Center for Cybersecurity at the Institute of Computing & Cybersystems at Michigan Technological University.

2010 – 2017 **Associate Professor**, *Dept. of Mathematics & Computer Science*, John Jay College, City University of New York. Also a faculty member of the Doctoral Program in Computer Science at the Graduate Center of the City University of New York.

2012 – 2013 **Visiting Associate Professor (sabbatical leave)**, *Dept. of Computer Science & Engineering*, Hong Kong University of Science and Technology.

2006 – 2010 **Assistant Professor**, *Dept. of Mathematics & Computer Science*, John Jay College, City University of New York.

2005 - 2006 Research Associate, Dept. of Computer Science, University of Hong Kong.

2004 – 2005 **Research Associate**, *Dept. of Computer Science & Engineering*, Hong Kong University of Science and Technology.

2001 – 2004 Research Assistant Professor, Dept. of Electrical & Electronic Engineering, University of Hong Kong.

1998 – 2000 Research Assistant, Dept. of Electrical & Electronic Engineering, University of Hong Kong.

Fall 1997 Part-time Lecturer, Dept. of Electrical Engineering, University of Southern California.

1994 – 1996 Electrical Engineer (military service), Hellenic Navy, Greece.

Research Interests

Security & Secure and privacy-preserving computations, location privacy, applied cryptography, computer/network Privacy security and forensics, query authentication.

Mobile Location-based services, data management for mobile and pervasive computing, spatial databases, Computing spatio-temporal data mining, sensor networks.

Honors and Awards

- 2011 Faculty Scholarly Excellence Reward, John Jay College, CUNY.
- 2009 Faculty Early Career Development (CAREER) Award, U.S. National Science Foundation.
- 2008 Faculty Scholarly Excellence Reward, John Jay College, CUNY.
- 1996 1999 State Scholarships Foundation of Greece, Greek Government.

Research Funding

2019 - 2022 Qatar National Research Fund, National Priorities Research Program.

Extending blockchain technology – a novel paradigm and its applications to cybersecurity and fintech (Co-PI, USD 600,000)

2019-2020 HBKU Innovation Center.

Privacy-preserving video surveillance (PI, USD 14,000)

2013 – 2015 U.S. National Science Foundation, SBE Office of Multidisciplinary Activities.

Towards a cellphone-based infrastructure for harvesting dynamic interaction network data (Co-PI, USD 249,780)

2009 – 2014 **U.S. National Science Foundation**, Division of Information & Intelligent Systems. *CAREER: Providing authentication and privacy in location-based services* (PI, USD 489,161)

Publication List

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

Book [1] N. Mamoulis, S. Bakiras, and P. Kalnis, "Top-k OLAP queries using augmented spatial access Chapters methods," in *Encyclopedia of GIS*, Springer, pp. 1156–1161, 2008.

Journal Papers

- [2] M. M. Rathore, M. J. Gul, A. Paul, A. A. Khan, R. W. Ahmad, J. J. P. C. Rodrigues, and S. Bakiras, "Multilevel graph-based decision making in big scholarly data: an approach to identify expert reviewer, finding quality impact factor, ranking journals and researchers," in *IEEE Transactions on Emerging Topics in Computing*, 2018.
- [3] E. Troja and S. Bakiras, "Optimizing Privacy-preserving DSA for mobile clients," in *Ad Hoc Networks*, 59:71–85, May 2017.
- [4] B. Mu and S. Bakiras, "Private proximity detection for convex polygons," in *Tsinghua Science and Technology*, 21(3):270–280, June 2016.
- [5] E. Troja and S. Bakiras, "Leveraging P2P interactions for efficient location privacy in database-driven dynamic spectrum access," in *International Journal of Network Security*, 17(5):567–579, September 2015.
- [6] L. Hu, W.-S. Ku, S. Bakiras, and C. Shahabi, "Spatial query integrity with Voronoi neighbors," in *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 25(4):863–876, April 2013.
- [7] S. Papadopoulos, S. Bakiras, and D. Papadias, "pCloud: A distributed system for practical PIR," in *IEEE Transactions on Dependable and Secure Computing (TDSC)*, 9(1):115–127, January 2012.
- [8] S. Papadopoulos, S. Bakiras, and D. Papadias, "Nearest neighbor search with strong location privacy," in *Proc. of the VLDB Endowment (PVLDB)*, 3(1):619–629, September 2010.
- [9] K. Mouratidis, S. Bakiras, and D. Papadias, "Continuous monitoring of spatial queries in wireless broadcast environments," in *IEEE Transactions on Mobile Computing (TMC)*, 8(10):1297–1311, October 2009.
- [10] M. L. Yiu, N. Mamoulis, and S. Bakiras, "Retrieval of spatial join pattern instances from sensor networks," in *GeoInformatica*, 13(1):57–84, March 2009.
- [11] S. Bakiras, F. Wang, D. Papadias, and M. Hamdi, "Vertical dimensioning: A novel DRR implementation for efficient fair queueing," in *Computer Communications*, 31(14):3476–3484, September 2008.
- [12] Z. Zhu, P. Kalnis, and S. Bakiras, "DCMP: A distributed cycle minimization protocol for peer-to-peer networks," in *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, 19(3):363–377, March 2008.
- [13] K. Mouratidis, D. Papadias, S. Bakiras, and Y. Tao, "A threshold-based algorithm for continuous monitoring of k nearest neighbors," in *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 17(11):1451–1464, November 2005.
- [14] S. Bakiras, T. Loukopoulos, D. Papadias, and I. Ahmad, "Adaptive schemes for distributed web caching," in *Journal of Parallel and Distributed Computing (JPDC)*, 65(12):1483–1496, December 2005.

- [15] S. Bakiras and T. Loukopoulos, "Combining replica placement and caching techniques in content distribution networks," in *Computer Communications*, 28(9):1062–1073, June 2005.
- [16] S. Bakiras and V. O. K. Li, "A scalable architecture for end-to-end QoS provisioning," in *Computer Communications*, 27(13):1330–1340, August 2004.
- [17] S. Bakiras and V. O. K. Li, "Maximizing the number of users in an interactive video-on-demand system," in *IEEE Transactions on Broadcasting*, 48(4):281–292, December 2002.

Conference Proceedings

- [18] E. Bentafat, M. M. Rathore, and S. Bakiras, "A practical system for privacy-preserving video surveil-lance," in *Proc. International Conference on Applied Cryptography and Network Security (ACNS)*, June 2020.
- [19] K. Yao, D. Papadias, and S. Bakiras, "Density-based community detection in geo-social networks," in *Proc. International Symposium on Spatial and Temporal Databases (SSTD)*, August 2019.
- [20] M. M. Rathore, E. Bentafat, and S. Bakiras, "Smart home security: A distributed identity-based security protocol for authentication and key exchange," in *Proc. IEEE International Conference on Computer Communications and Networks (ICCCN)*, July 2019.
- [21] A. K. Abdulla and S. Bakiras, "HITC: Data privacy in online social networks with fine-grained access control," in *Proc. ACM Symposium on Access Control Models and Technologies (SACMAT)*, June 2019.
- [22] X. Xu, Y. Zhao, D. Zhao, L. Yang, and S. Bakiras, "Distributed real-time data aggregation scheduling in duty-cycled multi-hop sensor networks," in *Proc. International Conference on Wireless Algorithms, Systems and Applications (WASA)*, June 2019.
- [23] E. M. Radi, N. Lasla, S. Bakiras, and M. Mahmoud, "Privacy-preserving electric vehicle charging for peer-to-peer energy trading ecosystems," in *Proc. IEEE International Conference on Communications (ICC)*, May 2019.
- [24] S. Bakiras, E. Troja, and X. Hu, "An anonymous messaging system for delay tolerant networks," in *Proc. IEEE International Conference on Communications (ICC)*, May 2017.
- [25] E. Troja and S. Bakiras, "Privacy-preserving location-aware mobile advertisement," in *Proc. IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TRUSTCOM)*, August 2016.
- [26] E. Troja and S. Bakiras, "Efficient location privacy for moving clients in database-driven dynamic spectrum access," in *Proc. IEEE International Conference on Computer Communications and Networks (ICCCN)*, August 2015.
- [27] E. Troja and S. Bakiras, "Leveraging P2P interactions for efficient location privacy in database-driven dynamic spectrum access," in *Proc. ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS)*, November 2014 (poster).
- [28] S. Buyrukbilen and S. Bakiras, "Privacy-preserving ranked search on public-key encrypted data," in *Proc. IEEE International Conference on High Performance Computing and Communications (HPCC)*, November 2013.
- [29] S. Buyrukbilen and S. Bakiras, "Secure similar document detection with simhash," in *Proc. VLDB Workshop on Secure Data Management (SDM)*, August 2013.
- [30] B. Mu and S. Bakiras, "Private proximity detection for convex polygons," in *Proc. ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE)*, pp. 36–43, June 2013.
- [31] S. Bakiras and K. F. Nikolopoulos, "Adjusting the trade-off between privacy guarantees and computational cost in secure hardware PIR," in *Proc. VLDB Workshop on Secure Data Management (SDM)*, pp. 128–144, September 2011.
- [32] L.Hu, W.-S. Ku, S. Bakiras, and C. Shahabi, "Verifying spatial queries using Voronoi neighbors," in *Proc. ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS)*, pp. 350–359, November 2010.
- [33] S. Papadopoulos, Y. Yang, S. Bakiras, and D. Papadias, "Continuous spatial authentication," in *Proc. International Symposium on Spatial and Temporal Databases (SSTD)*, pp. 62–79, July 2009.
- [34] N. Vyahhi, S. Bakiras, P. Kalnis, and G. Ghinita, "Tracking moving objects in anonymized trajectories," in *Proc. International Conference on Database and Expert Systems Applications (DEXA)*, pp. 158–171, September 2008.

- [35] M. L. Yiu, N. Mamoulis, and S. Bakiras, "Retrieval of spatial join pattern instances from sensor networks," in *Proc. International Conference on Scientific and Statistical Database Management (SSDBM)*, July 2007.
- [36] K. Mouratidis, S. Bakiras, and D. Papadias, "Continuous monitoring of top-k queries over sliding windows," in *Proc. ACM International Conference on Management of Data (SIGMOD)*, pp. 635–646, June 2006.
- [37] P. Kalnis, N. Mamoulis, S. Bakiras, and X. Li, "Ad-hoc distributed spatial joins on mobile devices," in *Proc. IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, April 2006.
- [38] N. Mamoulis, S. Bakiras, and P. Kalnis, "Evaluation of top-k OLAP queries using aggregate R-trees," in *Proc. International Symposium on Spatial and Temporal Databases (SSTD)*, pp. 236–253, August 2005.
- [39] P. Kalnis, N. Mamoulis, and S. Bakiras, "On discovering moving clusters in spatio-temporal data," in *Proc. International Symposium on Spatial and Temporal Databases (SSTD)*, pp. 364–381, August 2005.
- [40] M. Terrovitis, S. Bakiras, D. Papadias, and K. Mouratidis, "Constrained shortest path computation," in *Proc. International Symposium on Spatial and Temporal Databases (SSTD)*, pp. 181–199, August 2005.
- [41] S. Bakiras, "Approximate server selection algorithms in content distribution networks," in *Proc. IEEE International Conference on Communications (ICC)*, pp. 1490–1494, May 2005.
- [42] S. T. Goh, P. Kalnis, S. Bakiras, and K. L. Tan, "Real datasets for file-sharing peer-to-peer systems," in *Proc. International Conference on Database Systems for Advanced Applications (DASFAA)*, pp. 201–213, April 2005.
- [43] S. Bakiras and T. Loukopoulos, "Increasing the performance of CDNs using replication and caching: A hybrid approach," in *Proc. IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, April 2005.
- [44] P. K. C. Tse, S. Bakiras, and K. K. Wong, "On providing QoS guarantees for real-time multimedia streams," in *Proc. International Conference on Advances in Mobile Multimedia*, September 2004.
- [45] N. Mamoulis, P. Kalnis, S. Bakiras, and X. Li, "Optimization of spatial joins on mobile devices," in *Proc. International Symposium on Spatial and Temporal Databases (SSTD)*, pp. 233–251, July 2003.
- [46] S. Bakiras, T. Loukopoulos, and I. Ahmad, "Dynamic organization schemes for cooperative proxy caching," in *Proc. IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 48–55, April 2003.
- [47] S. Bakiras, P. Kalnis, T. Loukopoulos, and W. S. Ng, "A general framework for searching in distributed data repositories," in *Proc. IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 34–41, April 2003.
- [48] S. Bakiras and V. O. K. Li, "Efficient resource management for end-to-end QoS guarantees in DiffServ networks," in *Proc. IEEE International Conference on Communications (ICC)*, pp. 1220–1224, April 2002.
- [49] S. Bakiras and V. O. K. Li, "Quality of service support in differentiated services packet networks," in *Proc. IEEE International Conference on Communications (ICC)*, pp. 2370–2374, June 2001.
- [50] S. Bakiras and V. O. K. Li, "Maximizing Network Utilization for Streaming Video," in *Proc. Asia Pacific Conference on Multimedia Technology and Applications*, pp. 27–35, December 2000 (invited paper).
- [51] S. Bakiras and V. O. K. Li, "Smoothing and prefetching video from distributed servers," in *Proc. IEEE International Conference on Network Protocols (ICNP)*, pp. 311–318, October 1999.

Professional Activities

Program Committee Member

2019 International Symposium on Spatial and Temporal Databases (SSTD)
IEEE Global Communications Conference (GLOBECOM)
International Conference on Database and Expert Systems Applications (DEXA)

	IEEE International Conference on Connected Vehicles and Expo (ICCVE)
	International Conference on Cyber Security (ICCS)
2018	International Conference on Digital Forensics & Cyber Crime (ICDF2C)
	International Conference on Database and Expert Systems Applications (DEXA)
	ISEA International Conference on Security & Privacy (ISEA-ISAP)
	IEEE International Conference on Ubiquitous Computing and Communications (IUCC)
2017	Asia Security and Privacy Conference (Asia S&P)
2011	International Conference on Digital Forensics & Cyber Crime (ICDF2C)
	International Symposium on Spatial and Temporal Databases (SSTD)
2016	International Conference on Database and Expert Systems Applications (DEXA)
2016	International Conference on Database Systems for Advanced Applications (DASFAA)
	International Conference on Database and Expert Systems Applications (DEXA)
	IEEE International Conference on Ubiquitous Computing and Communications (IUCC)
	International Conference on Digital Forensics & Cyber Crime (ICDF2C)
2015	
	International Symposium on Spatial and Temporal Databases (SSTD)
	International Conference on Database and Expert Systems Applications (DEXA)
	International Conference on Database Systems for Advanced Applications (DASFAA)
	International Conference on Connected Vehicles & Expo (ICCVE)
2014	ACM International Conference on Information and Knowledge Management (CIKM)
	International Conference on Database and Expert Systems Applications (DEXA)
	IEEE International Conference on Ubiquitous Computing and Communications (IUCC)
2013	International Symposium on Spatial and Temporal Databases (SSTD)
	IEEE Mobile Data Management (MDM)
	International Conference on Database and Expert Systems Applications (DEXA)
	ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE)
	International Conference on Connected Vehicles & Expo (ICCVE)
2012	IEEE International Conference on Communications (ICC)
	International Conference on Computing, Networking and Communications (ICNC)
	International Conference on Database and Expert Systems Applications (DEXA)
	International Conference on Multimedia and Ubiquitous Engineering (MUE)
2011	International Symposium on Spatial and Temporal Databases (SSTD)
	International Conference on Database and Expert Systems Applications (DEXA)
	IEEE Global Telecommunications Conference (GLOBECOM)
	International Conference on Multimedia and Ubiquitous Engineering (MUE)
2010	International Conference on Database and Expert Systems Applications (DEXA)
	IEEE Global Telecommunications Conference (GLOBECOM)
	International Workshop on Semantic and Conceptual Issues in GIS (SeCoGIS)
2009	International Symposium on Spatial and Temporal Databases (SSTD)
	International Conference on Database and Expert Systems Applications (DEXA)
	International Workshop on Semantic and Conceptual Issues in GIS (SeCoGIS)
	International Conference on Communications and Networking in China (ChinaCom)
2007	International Symposium on Spatial and Temporal Databases (SSTD)
	IEEE Global Telecommunications Conference (GLOBECOM)
2006	
	IADIS Conference on Database Systems (DS)
	IADIS Conference on WWW/Internet
2005	
2000	1222 TOTALIST OF THE TETETHANICE SWITCHING AND TOURING (TH SIT)

IADIS Conference on Database Systems (DS) IADIS Conference on WWW/Internet

External Reviewer

- 2009 IEEE International Symposium on Wireless Communication Systems (ISWCS)
- 2008 IEEE International Conference on Data Engineering (ICDE)
- 2007 ACM International Conference on Management of Data (SIGMOD)

International Conference on Very Large Data Bases (VLDB)

ACM International Symposium on Advances in Geographic Information Systems (GIS)

IEEE Consumer Communications and Networking Conference (CCNC)

2006 ACM International Conference on Management of Data (SIGMOD)

International Conference on Very Large Data Bases (VLDB)

ACM International Conference on Knowledge Discovery & Data Mining (SIGKDD)

ACM International Symposium on Advances in Geographic Information Systems (GIS)

International Conference on Extending Database Technology (EDBT)

- 2005 IEEE International Conference on Communications (ICC)
- 2004 IEEE International Conference on Distributed Computing Systems (ICDCS)
- 2003 IEEE Vehicular Technology Conference (VTC)

Journal Reviewer

2019 IEEE Transactions on Knowledge and Data Engineering

Computer Communications

Security and Communication Networks

Wireless Communications and Mobile Computing

IEEE Transactions on Network Science and Engineering

2018 IEEE Transactions on Mobile Computing

ACM Transactions on Spatial Algorithms and Systems

IEEE Transactions on Cognitive Communications and Networking

IEEE Transactions on Information Forensics & Security

Journal of Parallel and Distributed Computing

Security and Communication Networks

Computer Communications

Ad Hoc Networks

2017 IEEE Transactions on Sustainable Computing

IEEE Transactions on Industrial Informatics

IEEE Transactions on Mobile Computing

2016 IEEE Transactions on Knowledge and Data Engineering

GeoInformatica

2015 IEEE Transactions on Knowledge and Data Engineering

IEEE Transactions on Information Forensics & Security

IEEE Transactions on Vehicular Technology

2014 Theory of Computing Systems

Information Systems

Security and Communication Networks

GeoInformatica

2013 IEEE Transactions on Knowledge and Data Engineering

KSII Transactions on Internet and Information Systems

2012 VLDB Journal

ACM Transactions on Database Systems

Journal of Computer Science and Technology

- 2011 Data & Knowledge Engineering
- 2010 VLDB Journal

Data & Knowledge Engineering

IEEE Transactions on Knowledge and Data Engineering

2009 Data & Knowledge Engineering

IEEE Communications Letters

Sensors

- 2008 IEEE Transactions on Knowledge and Data Engineering
- 2007 VLDB Journal
 - IEEE Transactions on Knowledge and Data Engineering
- 2006 IEEE Transactions on Communications
 - IEEE Transactions on Multimedia
- 2003 IEEE Transactions on Broadcasting
- 2002 IEEE Transactions on Wireless Communications

NSF Panelist

- 2011 Division of Information and Intelligent Systems (IIS)
- 2010 Division of Information and Intelligent Systems (IIS)

Conference Organization

- 2015 IEEE Symposium on Person, Indoor, and Mobile Radio Communications (PIMRC) Track Co-Chair for the Service, Applications, and Business track
- 2013 IEEE International Conference on Mobile Data Management (MDM) Publicity Chair

STUDENT ADVISING

Ph.D. Thesis Advisor

Abdulaziz Hamed Al-Marwani, HBKU (since 2019)

Kamela Ali Al-Mannai, HBKU (since 2019)

Ahmed Khalil Abdulla, HBKU (since 2018)

Elmahdi Bentafat, HBKU (since 2017)

Khalid Al-Kubaisi, HBKU (since 2017)

Sana Alfarsi, HBKU (since 2017)

Konstantinos Nikolopoulos, CUNY Graduate Center (graduated in 2017)

Erald Troja, CUNY Graduate Center (graduated in 2015)

Sahin Buyrukbilen, CUNY Graduate Center (graduated in 2013)

M.S. Thesis Advisor

Ahmed Aziz, HBKU (since 2019)

Adnan Fekri, HBKU (since 2018)

Eman Mohammed Radi, HBKU (graduated in 2019)

Ahmed Khalil Abdulla, HBKU (graduated in 2018)

Navroz Shariff, John Jay College, CUNY (graduated in 2015)

Anthony Sydney, John Jay College, CUNY (graduated in 2014)

TEACHING EXPERIENCE

2016 - present Hamad Bin Khalifa University

Applied cryptography (graduate) - Fall'16, Fall'17

Network forensics (graduate) - Fall'18, Fall'19

Security risk analysis (graduate) - Spring'17, Spring'18

Introduction to computer systems – Spring'19, Spring'20 Cybersecurity Fundamentals – Fall'19

2015 – 2016 Michigan Technological University

Introduction to algorithms – Fall'15

Software quality assurance - Spring'16

2006 - 2015 John Jay College, CUNY

Applied cryptography (graduate) - Spring'12, Spring'14, Spring'15

Architecture of secure operating systems (graduate) - Fall'13

Database security (graduate, at the CUNY Graduate Center) - Spring'11

Data communications forensics and security (graduate) - Spring'10, Spring'11

Theoretical foundations of computing security (graduate) - Fall'07

Forensic management of digital evidence (graduate) - Fall'06

Database systems - Spring'10, Spring'11

Advanced data structures - Fall'08, Fall'10, Fall'11, Fall'13, Fall'14

Object oriented programming - Fall'07, Fall'08, Fall'09

Programming languages - Spring'07

Introduction to computing and programming - Fall'06, Spring'08

2012 - 2013 Hong Kong University of Science and Technology

Introduction to computing with Java - Fall'12

Network security - Spring'13

2001 – 2004 University of Hong Kong

Queueing theory - Fall'01, Fall'02, Fall'03

System modeling and performance analysis - Spring'03, Spring'04

1997 University of Southern California

Design and analysis of computer communication networks (graduate) - Fall'97

Administrative Experience

Hamad Bin Khalifa University

ICT Admission and Student Affairs Committee (2018-present)

ICT Research and Graduate Affairs Committee (2018-present)

ICT Equipment and Facilities Committee, Chair (2018-present)

ICT Search and Promotion Committee (2018-present)

John Jay College, CUNY

Major Coordinator (2014-2015)

Departmental Curriculum Committee (2008-2011, 2013-2015)

Departmental Personnel and Budget Committee (2009-2012)

Faculty Senate Committee (2008-2011)

College Council Committee (2008-2011)

Institutional Review Board (IRB) Committee (2010-2012)