Dilum Bandara

Research Scientist – Distributed Systems, IoT, Data Engineering, and Security

PROFESSIONAL PROFILE

13+ years of experience in university teaching. R&D experience with 40+ peer reviewed publications in Distributed Systems (Cloud, P2P, and Blockchain), IoT, Data Engineering, and Security. Adept at multi-disciplinary applications of those technologies, where continuing work in the domains of weather monitoring and fleet management. With 7+ years of consultancy expertise in Data Centre, Cloud, Security, and Performance Engineering.

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EDUCATION

Ph.D.
Electrical and Computer Eng.
Colorado State University
Fort Collins, U.S.A.
2008 - 2012

M.S.
Electrical and Computer Eng.
Colorado State University
Fort Collins, U.S.A.
2007 - 2008

B.Sc. (Hons) Eng. (1st Class)
Computer Science and Eng.
University of Moratuwa
Katubedda, Sri Lanka.
2001 - 2004

College Teaching Certificate
Colorado State University,
Fort Collins, U.S.A.
2012

KEY SKILLS

Distributed Systems

Cloud Computing

Data Engineering

IoT

Software & Network Security

Teaching

Research & Development

MEMBERSHIPS

Senior Member, IEEE

Charter Engineer, IESL

Professional Member, ACM

President, Student Leadership
Council, NSF Eng. Research
Centre for CASA, USA

PROFESSIONAL EXPERIENCE

Research Scientist
Data61, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Sydney, Australia.
Mar 2019 – Present

Senior Lecturer
Computer Science and Engineering, University of Moratuwa, Sri Lanka.
Dec 2012 - Present

Director
Engineering Research Unit, University of Moratuwa, Sri Lanka.
July 2015 – July 2018

Co-Founder/Director
VaticHub (Pvt) Ltd., Sri Lanka.
Aug 2016 – July 2018

Senior Consultant
TechCERT (Computer Emergency Readiness Team), Sri Lanka.
Sep 2014 - Present

Consultant
99X Technology (Pvt) Ltd., Sri Lanka.
Oct 2017 - Present

Graduate Research/Teaching Assistant
Computer Networking Research Laboratory, Electrical and Computer Engineering, Colorado State University (CSU), Fort Collins, U.S.A.
Jan 2007 - Dec 2012

CURRENT PROJECTS

Blockchain Data Management and Applications
Software patterns for data migration across blockchains/databases, and development of techniques to achieve distributed database properties in blockchains. On-blockchain food traceability solutions to go beyond proof of existence. Dynamic wireless spectrum management in cognitive and citizens broadband radio services.

Integrated Information System for Flood Forecasting and Control
Cloud-based computational infrastructure of the national Center for Urban Water (CUrW), Sri Lanka. Automated execution of weather, hydrodynamic, and hydrology workflows; timeseries data integration and assimilation; and decision support.

Vehicular Data Analytics
IoT platform for OBD2 and GPS base real-time vehicular data collection. Analytics for drive behaviour profiling and monitoring, fuel fraud detection, preventive maintenance, as well as fleet, driver behaviour, fuel, and schedule optimization.

Workload, Resource, Performance, and Cost Aware Cloud Computing
Workload, resource, performance, and cost aware proactive auto-scaling and VM scheduling for IaaS and PaaS clouds. Multi-cloud library for enhanced availability.

SELECTED PUBLICATIONS

T. Ariyarathna, P. Harankahadeniya, S. Isthikar, N. Pathirana, H.M.N.D. Bandara, and A. Madanayake, "Dynamic Spectrum Access via Smart Contracts on Blockchain," in Proc. EEE Wireless Communications and Networking Conf. (WCNC '19), Marrakech, Morocco, Apr. 2019.

B.D. Hettiarachchi, H.M.N.D Bandara, and N.A. Samarasekera, "Automated Multi-Plant Scheduling of Ready-Mixed Concrete Trucks," in Proc. IEEE Intl. Conf. on Service Operations and Logistics, and Informatics, July/Aug. 2018, Singapore.

S.R. Muramudalige and H.M.N.D. Bandara, "Automated Driver Scheduling for Vehicle Delivery," In Proc. Intelligent Transport Systems – From Research and Development to the Market Uptake, Nov. 2017, Finland.

R.N. Navagamuwa, K.J.P.G. Perera, M.R.M.J. Sally, L.A.V.N. Prashan, and HMND Bandara, "Automated Query Generation for Complex Event Processing: A Shapelets, Parallel Coordinates, and Clustering Based Approach," Intl. J. of Computing and Digital Systems (IJCDS), vol. 6, no. 4, July 2017.

R.S. Shariffdeen, D.T.S.P. Munasinghe, H.S. Bhathiya, U.K.J.U. Bandara, and H.M.N.D. Bandara, "Workload and Resource Aware Proactive Auto-Scaler for PaaS Cloud," in Proc. 9th IEEE Intl. Conf. on Cloud Computing, June/July 2016.

L. Logeswaran, H.M.N.D. Bandara, and H.S. Bhathiya, "Performance, Resource, and Cost Aware Resource Provisioning in the Cloud," in Proc. 9th IEEE Intl. Conf. on Cloud Computing, June/July 2016, San Francisco.

P. S. Rodrigo, H.M.N.D. Bandara, and S. Perera, "Accelerating Complex Event Processing through GPUs", 22nd IEEE Intl. Conf. on High Performance Computing (HiPC 2015), Dec. 2015.

M. Amarasinghe, S. Muramudalige, S. Kottegoda, A.L. Arachchi, and H.M.N.D. Bandara, "Cloud-Based Driver Monitoring and Vehicle Diagnostic with OBD2 Telematics," Intl. J. of Handheld Computing Research (IJHCR), vol. 6, no. 4, 2015.

H.M.N.D. Bandara and A.P. Jayasumana, "P2P-Based, Multi-Attribute Resource Discovery Under Real-World Resources and Queries," ACM Transactions on Internet Technology, vol. 15, no. 1, 2015.

H.M.N.D. Bandara and A.P. Jayasumana, "Resource and Query Aware, Multi-Attribute Resource Discovery for P2P Systems," Intl. J. of Computing and Network Technology, vol. 2, no. 2, 2014, pp. 47-57.

H.M.N.D. Bandara and A.P. Jayasumana, "Distributed, Multi-User, Multi-Application, and Multi-Sensor Data Fusion Over Named Data Networks," Elsevier Computer Networks, 2013, doi: 10.1016/j.comnet.2013.07.033

H.M.N.D. Bandara and A.P. Jayasumana, "Community-Based Caching for Enhanced Lookup Performance in P2P Systems," IEEE Transactions on Parallel and Distributed Systems, vol. 24, no. 9, Sep. 2013, doi: 10.1109/TPDS.2012.270.

H.M.N.D. Bandara and A.P. Jayasumana, "Collaborative Applications over Peer-to-Peer Systems – Challenges and Solutions," Peer-to-Peer Networking and Applications, Springer, vol. 6, no. 3, 2012, pp. 257-276.

P. Lee, A.P. Jayasumana, H.M.N.D. Bandara, S. Lim, and V. Chandrasekar, "A Peer-to-Peer Collaboration Framework for Multi-Sensor Data Fusion," Journal of Network and Computer Applications, vol. 35, no. 2, May 2012, pp. 1052-1066.

H.M.N.D. Bandara, A.P. Jayasumana, and Tissa H. Illangasekare, "A Top-Down Clustering and Cluster-Tree Based Routing Scheme for Wireless Sensor Networks," Int. Journal of Distributed Sensor Networks, vol. 2011.

RESEARCH TALKS

"Blockchain – A Catalyst for Solving Age-Old Distributed Systems Problems," Colombo Blockchain Dev Meetup, Sep. 2018.

"Big data, Security, or Privacy in IoT: Choice is Yours," Mobitel NB-IoT Forum, Sri Lanka, Mar. 2018.

"IoT and Big Data for Smart Transportation Systems," Manufacturing & Industrial Engineering Symp., Sri Lanka, Oct. 2016.

"Data-Driven Education, Research, and Trade Using the Cloud," Seychelles and Sri Lanka: Investment and Education – 2016, University of Seychelles, July 2016.

GRANTS, AWARDS, AND SCHOLARSHIPS

Award of Excellence – Outstanding Research Performances with Distinction (2016) and Outstanding Research Performances (2015), University of Moratuwa, Sri Lanka, 2017.

Student Paper Award (Merit), 2018 IEEE Intl. Conf. on Service Operations and Logistics, and Informatics (SOLI 2018), Singapore, July/Aug. 2018.

Best Poster, ERU Symposium 2018, University of Moratuwa, Sri Lanka, May 2008.

Best Poster, ISTec Student Research Poster Contest 2008, Colorado State University, Fort Collins, U.S.A., 2008.

Metro Colombo Urban Development Project, Ministry of Megapolis and Western Development, Sri Lanka 2017/2018. Title: Real-Time Control Center Data Integration and Forecasting.

Senate Research Grant, University of Moratuwa, 2018/2019, 2016/2017, and 2014/2015.