



Algorithms and Systems for the IoT Data Revolution



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Room: XOD 02 (In the basement) – **B 107**

Location: <https://goo.gl/maps/fNWanm9Gk3PL5XTu7>

Abstract: Internet-of-Things (IoT) describes physical objects with sensors, processing ability, software and other technologies that connect and exchange data with other devices and systems over the Internet. These objects are projected to outpace the number of humans on the Internet, namely, by 2030 there will be 8.6B humans according to UN DESA and over 500B IoT devices according to Cisco. Huawei predicts that this will create yottabytes (YB) of machine-generated spatio-temporal data every year requiring a complete rethink on how we collect and store data, how we process it in a timely manner and how we generate value and utility out of it. In this talk, I will present three pillars of IoT data management research in the scope of systems related to indoor localization, telecommunication big data and smart spaces. I will start out with the presentation of data-driven localization algorithms for mobile devices in systems with: (i) no telecommunication infrastructure; (ii) disconnected handheld operation; and (iii) inherent privacy constraints of users. I will proceed with the presentation of data decaying operators for telco big data systems, which abstract IoT influx data into compact machine learning models that can be stored and queried when necessary. I will conclude with scheduling operators of IoT devices inside smart spaces to reduce the environmental impact of human activity. I will conclude with an outlook to my current and future research agenda.

Biography: Demetris Zeinalipour is a Professor of Computer Science at the University of Cyprus, where he leads the Data Management Systems Laboratory (DMSL). His primary research interests include Data Management in Computer Systems and Networks, particularly Mobile, Sensor and Spatio-Temporal Data Management; Big Data Management in Parallel and Distributed Architectures; Network, Blockchain and Telco Data Management; Crowd, Web 2.0 and Indoor Data Management; Data Privacy Management; Data Management for Sustainability. He holds a Ph.D. and M.Sc. in Computer Science and Engineering from University of California - Riverside, CA, USA and a B.Sc. in Computer Science from the University of Cyprus. Before his current appointment, he served the University of Cyprus as an Assistant Professor and Lecturer but also the Open University of Cyprus as a Lecturer. He has held visiting research appointments at Akamai Technologies, Cambridge, MA, USA, the University of Athens, Greece, the University of Pittsburgh, PA, USA and the Max Planck Institute for Informatics, Saarbrücken, Germany. He is a Humboldt Fellow, Marie-Curie Fellow, an ACM Distinguished Speaker (2017-2020), a Senior Member of ACM, a Senior Member of IEEE and a Member of USENIX. He serves on the editorial board of Distributed and Parallel Databases (Elsevier), Big Data Research (Springer), SI Editor for ACM Transactions on Spatial Algorithms and Systems (ACM) and is an independent evaluator for the European Commission (Marie Skłodowska-Curie and COST actions), the Hong Kong Research Grants Council and the Hellenic Foundation for Research and Innovation. His h-index is 32, has over 150 articles with over 4000 citations, has an Erdős number of 3, was awarded 12 international awards and honors (IEEE-MDM18, IEEE-MDM17, ACM17, ACMS16, IEEE16, HUMBOLDT16, ACM-IEEE-IPSN14, EVARILOS14, APPCAMPUS13, IEEE-MDM12, MC07, CIC06) and delivered over 40 invited talks. He was General Co-Chair for 4 conferences/workshops (IEEE MDM22, EDBTICDT21, VLDB's DMSN11, ACM MobiDE10) and Program Co-Chair for 8 conferences/workshops (IEEE-MDM19, IEEE-MDM10, IEEE-ALIAS19, IEEE-MUSICAL16, IEEE-HuMoComp15, HDMS18, VLDB-DMSN10, ACM-MobiDE09). He has participated in over 20 projects funded by the US National Science Foundation, by the European Commission, the Cyprus Research Promotion Foundation, the Univ. of Cyprus, the Open University of Cyprus and the Alexander von Humboldt Foundation, Germany. Finally, he has also been involved in industrial Research and Development projects (e.g., France, Finland, India, Taiwan and Cyprus) and has technically lead several open source mobile data management services (e.g., Anyplace, VGATE, Rayzit and Smartlab) reaching thousands of users worldwide. He served the Faculty of Pure and Applied Sciences (FPAS) Board for two terms as an elected departmental representative (2019-2022) and is currently an elected member of the University of Cyprus Senate.

> For more information please visit: <https://www.cs.ucy.ac.cy/~dzeina/> or the DMSL website: <https://dmsl.cs.ucy.ac.cy/>