

Location Data Management: A Tale of Two Systems and the “Next Destination”!

Mohamed Mokbel

Department of Computer Science and
Engineering University of Minnesota

mokbel@cs.umn.edu

Chi-Yin Chow

Department of Computer Science,
City University of Hong Kong

chiychow@cityu.edu.hk

Walid Aref

Purdue University
West Lafayette, IN, USA

aref@cs.purdue.edu

ABSTRACT

In early 2000, we had the vision of ubiquitous location services, where each object is aware of its location, and continuously sends its location to a designated database server. This flood of location data opened the door for a myriad of location-based services that were considered visionary at that time, yet today they are a reality and have become ubiquitous. To realize our early vision, we identified two main challenges that needed to be addressed, namely, scalability and privacy. We have addressed these challenges through two main systems, PLACE and Casper. PLACE, developed at Purdue University from 2000 to 2005, set up the environment for built-in database support of scalable and continuous location-based services. The Casper system, developed at University of Minnesota from 2005 to 2010, was built inside the PLACE server allowing it to provide its high quality scalable service, while maintaining the privacy of its users' locations. This talk will take you through a time journey of location services from 2000 until today, and beyond, highlighting the development efforts of the PLACE and Casper systems, along with their impact on current and future research initiatives in both academia and industry.

BIOGRAPHIES

Mohamed F. Mokbel (Ph.D., Purdue University, MS, B.Sc., Alexandria University) is an Associate Professor in the Department of Computer Science and Engineering, University of Minnesota. His research interests include the interaction of GIS and location-based services with database systems and cloud computing. His research work has been recognized by five Best Paper Awards and by the NSF CAREER award. Mohamed is/was the program co-chair of SIGMOD 2018, ACM SIGSPATIAL from 2008 to 2010, and IEEE MDM 2011 and 2014. He is an Associate Editor for ACM TODS, ACM TSAS, VLDB journal, and GeoInformatica. Mohamed is currently serving as the elected Chair of ACM SIGSPATIAL 2014-2017. For more information, please visit: www.cs.umn.edu/~mokbel.

Chi-Yin Chow received the B.A. and M.Phil. degrees from The Hong Kong Polytechnic University, Hong Kong in 2002 and 2005, respectively. He also received the M.S. and Ph.D. degrees from the University of Minnesota-Twin Cities, USA in 2008 and 2010, respectively. He is currently an assistant professor in Department of Computer Science, City University of Hong Kong. His research interests include big data analytics, data management, GIS, mobile computing, location-based services, and data privacy. He is the co-founder and co-chair of the ACM SIGSPATIAL MobiGIS 2012 to 2016, and the editor of the ACM SIGSPATIAL Newsletter. Dr. Chow received the best paper awards in ICA3PP 2015 and IEEE MDM 2009.

Walid G. Aref is a professor of computer science at Purdue. His research interests are in extending the functionality of database systems in support of emerging applications, e.g., spatial, spatio-temporal, multimedia, biological, and sensor databases. He is also interested in query processing, indexing, data mining, and geographic information systems (GIS). Professor Aref's research has been supported by the National Science Foundation, the National Institute of Health, Purdue Research Foundation, Qatar National Research Foundation, CERIAS, Panasonic, and Microsoft Corp. In 2001, he received the CAREER Award from the National Science Foundation and in 2004, he received a Purdue University Faculty Scholar award. Professor Aref is a member of Purdue's CERIAS. He is an associate editor of the ACM Transactions of Database Systems (ACM TODS) and the ACM Transactions of Spatial Algorithms and Systems (TSAS), and has been an editor of the VLDB Journal. He is a senior member of the IEEE, and a member of the ACM. Professor Aref is an executive committee member, co-founder, and the past chair of the ACM Special Interest Group on Spatial Information (SIGSPATIAL).

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