Connected Cars: How Distributed Data Mining Is Changing the Next Generation of Vehicle Telematics Products

Hillol Kargupta[1,2]

[1] Agnik
[2] Computer Science & Electrical Engineering Department,
University of Maryland, Baltimore County
hillol@agnik.com

Abstract. Modern vehicles are embedded with varieties of sensors monitoring different functional components of the car and the driver behavior. With vehicles getting connected over wide-area wireless networks, many of these vehicle diagnostic-data along with location and accelerometer information are now accessible to a wider audience through wireless aftermarket devices. This data offer rich source of information about the vehicle and driver performance. Once this is combined with other contextual data about the car, environment, location, and the driver, it can offer exciting possibilities. Distributed data mining technology powered by onboard analysis of data is changing the face of such vehicle telematics applications for the consumer market, insurance industry, car repair chains and car OEMs. This talk will offer an overview of the market, emerging product-types, and identify some of the core technical challenges. It will describe how advanced data analysis has helped creating new innovative products and made them commercially successful. The talk will offer a perspective on the algorithmic issues and describe their practical significances. It will end with remarks on future directions of the field of Machine-to-Machine (M2M) sensor networks and how the next generation of researchers can play an important role in shaping that.

Brief Biography. Dr. Hillol Kargupta is a Professor of Computer Science at the University of Maryland, Baltimore County. He is also a co-founder of AGNIK, a vehicle performance data analytics company for mobile, distributed, and embedded environments. He received his Ph.D. in Computer Science from University of Illinois at Urbana-Champaign in 1996. His research interests include mobile and distributed data mining. Dr. Kargupta is an IEEE Fellow. He won the IBM Innovation Award in 2008 and a National Science Foundation CAREER award in 2001 for his research on ubiquitous and distributed data mining. He and his team received the 2010 Frost and Sullivan Enabling Technology of the Year Award for the MineFleet vehicle performance data mining product and the IEEE Top-10 Data Mining Case Studies Award. His other awards include the best paper award for the 2003 IEEE International Conference on Data Mining for a paper on privacy-preserving data mining, the 2000 TRW Foundation Award, and the 1997 Los Alamos Award for Outstanding Technical

F. Martins, L. Lopes, and H. Paulino (Eds.): S-Cube 2012, LNICST 102, pp. 73–74, 2012.

Achievement. His dissertation earned him the 1996 Society for Industrial and Applied Mathematics annual best student paper prize. He has published more than one hundred peer-reviewed articles. His research has been funded by the US National Science Foundation, US Air Force, Department of Homeland Security, NASA and various other organizations. He has co-edited several books. He serve(s/d) as an associate editor of the IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Systems, Man, and Cybernetics, Part B and Statistical Analysis and Data Mining Journal. He is/was the Program Co-Chair of 2009 IEEE International Data Mining Conference, General Chair of 2007 NSF Next Generation Data Mining Symposium, Program Co-Chair of 2005 SIAM Data Mining Conference and Associate General Chair of the 2003 ACM SIGKDD Conference, among others.