Speaker: Professor Athman Bouguettaya

Title: A Service-based Approach to Drone Service Delivery in Skyway Networks

Abstract

We propose a novel *service framework* to effectively provision drone-based delivery services in a skyway network. This service framework provides a high-level service-oriented architecture and an abstraction to model the drone service from both *functional* and *non-functional* perspectives. We focus on *spatio-temporal* aspects as key parameters to query the drone services under a range of requirements, including drone capabilities, flight duration, and payloads. We propose to *reformulate* the problem of drone package delivery as finding an optimal composition of drone delivery services from a designated take-off station (e.g., a warehouse rooftop) to a landing station (e.g., a recipient's landing pad). We select and compose those drone services that provide the best quality of delivery service in terms of payload, time, and cost under a range of *intrinsic* and *extrinsic* environmental (i.e., context-aware) factors, such as battery life, range, wind conditions, drone formation, etc. This talk will overview the key challenges and propose solutions in the context of single drones and swarms of drones for service delivery.

Short Bio

 Athman Bouguettaya is Professor and previous Head of School of Computer Science at the University of Sydney, Australia. He was also previously Professor and Head of School of Computer Science and IT at RMIT University, Melbourne, Australia. He received his PhD in Computer Science from the University of Colorado at Boulder (USA) in 1992. He was previously Science Leader in Service Computing at the CSIRO ICT Centre (now DATA61), Canberra. Australia. Before that, he was a tenured faculty member and Program director in the Computer Science department at Virginia Polytechnic Institute and State University (commonly known as Virginia Tech) (USA). He is or has been on the editorial boards of several journals including, IEEE Transactions on Big Data, the IEEE Transactions on Services Computing, IEEE Transactions on Knowledge and Data Engineering, ACM Transactions on Internet Technology, The ACM Computing Surveys, the International Journal on Next Generation Computing, VLDB Journal, Distributed and Parallel Databases Journal, and the International Journal of Cooperative Information Systems. He is also the Editor-in-Chief of the Springer-Verlag book series on Services Science. He served as a guest editor of a number of special issues including the special issue of the ACM Transactions on Internet Technology on Semantic Web services, a special issue the IEEE Transactions on Services Computing on Service Query Models, and a special issue of IEEE Internet Computing on Database Technology on the Web. He was the General Chair of the WISE International Conference for 2023. He was the General Chair of the IEEE ICWS for 2021 and 2022. He was also General Chair of ICSOC for 2020. He served as a Program Chair of the 2012 and 2017 International Conference on Web and Information System Engineering, the 2009 and 2010 Australasian Database Conference, 2008 International Conference on Service Oriented Computing (ICSOC) and the IEEE RIDE Workshop on Web Services for E-Commerce and E-Government (RIDE-WS-ECEG'04). He also served on the IEEE Fellow Selection Committee as a Vice-Chair for 2022 and 2023. He has published more than 330 books, book chapters, and articles in journals and conferences in the area of databases and service computing (e.g., the IEEE Transactions on Knowledge and Data Engineering, the ACM Transactions on the Web, ACM Computing Surveys, WWW Journal, VLDB Journal, SIGMOD, ICDE, VLDB, and EDBT). Bouguettaya's work in Web services and more generally in service computing greatly contributed to the formation of a whole community around the idea of service computing. The impact of his foundational work in Web services has led to numerous highly cited papers. He is listed as 0.5% top scholar in the world by the ScholarGPS World Ranking in Computer Science. He is also listed as Top 2% Scientist in Computer Science by Stanford University Study. He is also listed by Google Scholar as one of the top 10 cited researcher in the world using the keyword "Service Computing" or "Service-Oriented Computing" or "Web Services". He was the recipient of several federally competitive grants in Australia (e.g., ARC), the US (e.g., NSF, NIH), Qatar (NPRP). EU (FP7), and China (NSFC). He also won major industry grants from companies like HP and Sun Microsystems (now Oracle). He has been an invited speaker at many international conferences and universities around the world. Because of his pioneering work, he was invited to a keynote and speaker at a number of conferences and universities in Australia, UK, France, China, India, Morocco, Malaysia, Netherlands, Tunisia, New Zealand, Algeria, Qatar, the UAE, etc. Bouguettaya has trained many PhD students who went on to be professors at Purdue University (USA), University of Michigan, Rochester Institute of Technology, University of Melbourne, University of Queensland, Curtin University, and Texas A&M. He also trained a number of postdocs who are now researchers at Alibaba, Sun Yat-Sen University (China), University of Adelaide, Data61, and UNSW. Bouguettaya is a Fellow of the IEEE, Member of the Academia Europaea (Honoris Causa) (MAE) (HON), WISE Fellow, AAIA Fellow, and Distinguished Scientist of the ACM. He is also a Distinguished Speaker of the ACM and IEEE.