

4th International Conference and Business Expo on

Wireless, Telecommunication & IoT

July 19-20, 2018 | London, UK

5G NR positioning: A new opportunity to achieve sub-meter accuracy with mobile networks

Giuseppe Destino

King's College London, Strand Campus, UK

Millimeter-wave communication is considered one of the key enablers for 5G systems as it contributes to achieving high data rate with very wideband transmission, high beam forming gain and massive MIMO techniques. However, the wireless link in the extremely high frequency band (mm W band) is characterized by quasi-optical behaviour, i.e., line-of sight dominant and a few reflected (single bounce) paths. Leveraging this property along with the capability of beam forming and large signal bandwidth to radio-based positioning, accurate and reliable location-awareness can be achieved all time via mobile network. More specifically, a new approach for localization can be developed to (i) determine user's position from a single access point, and (ii) determine the orientation of the user, with respect to the access point. In this talk, we will illustrate all the benefits of this new localization solution, a brief introduction to the underpinning mathematical model and the trade-off with communications. Focus is on the analysis of the system model, achievable localization performance and dependency with system design parameters such as number of antennas, OFDM signal formation and interoperability with GNSS. The talk is centered around the application of autonomous driving use-case tackled in the EU H2020 5GCAR project.

Biography

Giuseppe Destino received his Doctor of Science degree at the University of Oulu in 2012, MSc (EE) degrees simultaneously from the Politecnico di Torino, Italy and University of Nice, France in 2005. Currently, he is working as Academy of Finland Postdoctoral Research Fellow as well as Project Manager of national and international projects at the Centre for Wireless Communications of the University of Oulu, Finland. In 2017, he worked at the Nokia Bell Labs, Oulu, under the Nokia Bell Labs and University of Oulu Joint Centre for Future Connectivity. Since 2018, he is associated with King's College London, Centre for Telecommunication Research (CTR), where he carries on activities on positioning and millimetre-wave technologies. His research interests include wireless communications, millimetre wave radio access technologies, especially, on algorithms for channel estimation, hybrid beam forming and positioning. He served as a member of the technical program committee of IEEE conferences.

giuseppe.destino@kcl.ac.uk

Notes: