

# EURECOM – IEEE Future Networks Distinguished Lecture

**\*Speaker:\***

Sumit Roy  
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Dept. of Electrical & Comp. Engineering  
U. Washington, Seattle

**\*Time & Location:\*** Wednesday, October 4th 14:00  
EURECOM, Room : **\*Salle des Conseils\***

**Title: “Towards Automotive Radar Networks for Enhanced Detection/Cognition”**

**Abstract:**

This presentation will present an overview of recent research at UW FUNLab around the use of vehicular radar for advanced driver assistance systems (en route to a future vision of autonomous driving). Wideband (typically FMCW or chirp) radars are increasingly deployed onboard vehicles as key high-resolution sensor for environmental mapping/imaging and various safety features. The talk will be demarcated in two parts, centered on the evolving role of radar ‘cognition’ in complex operating environments to address two important future challenges:

1. Mitigating multi-access interference among Radars (e.g dense traffic scenario)

This will first illustrate the impact of mutual interference on detection performance in commercial Chirp/FMCW radars and then highlight some multi-access protocol design approaches for effective resource sharing among multiple radars.

2. Contributions to radar vision via new radar hardware (MIMO radar) + associated advanced signal processing (Synthetic Aperture) principles using Convolutional Neural Network (‘Radar Net’) based machine learning approaches for enhanced object detection/classification in challenging circumstances.

**Bio:**

Sumit Roy (Fellow, IEEE 2007) received the B. Tech. degree from the Indian Institute of Technology (Kanpur) in 1983, and the M. S. and Ph. D. degrees from the University of California (Santa Barbara), all in Electrical & Comp. Engineering (1985 and 1988 respectively), as well as an M. A. in Statistics and Applied Probability (1988). His previous academic appointments were at the Moore School of Electrical Engineering, University of Pennsylvania, and at the University of Texas, San Antonio. His research interests and technology expertise spans analysis/design and prototyping of wireless communication systems/networks, with an emphasis on various technologies: 5G wireless LANs (802.11ax), 5G New Radio and emerging 5G/beyond 5G standards for vehicular (terrestrial and airborne) networks, multi-standard inter-networking/coexistence and dynamic spectrum access solutions for spectrum sharing. He was elevated to IEEE Fellow by Communications Society for “contributions to multi-user communications theory and cross-layer design of wireless networking standards” and held the /ECE-CoE/ /Integrated Systems Term Professorship/ (2014-19) at Univ. of Washington in recognition of

his international reputation in the area.

He spent 2001-03 on academic leave at Intel Wireless Technology Lab as a Senior Researcher engaged in systems architecture definition and IEEE standards contributions for ultra-wideband systems (Wireless PANs) and next generation high-speed (pre-802.11n) wireless LANs. He served as Science Foundation of Ireland Isaac Walton Fellow during a sabbatical at University College, Dublin (Jan-Jun 2008) and was the recipient of a Royal Acad. Engineering (UK) Distinguished Visiting Fellowship during summer 2011. During 2014-15, he spent a sabbatical year at Microsoft Research, Bangalore, India, as Erskine Fellow at University of Canterbury, New Zealand and as Short Term Visiting Foreign Expert at Shanghai JiaoTung University. His research has been consistently funded by various US agencies and industrial organizations leading to 10 awarded US patents and his work on Radar-WiFi Spectrum Sharing published in 2016 was recognized by IEEE Trans. Aersosp. Elect. Systems with Barry Carlton (Best Paper) Award. He also currently represents US on the NATO SET-302 Technical Working Group on 'Cognitive Radar'.

He continues to be professionally active in IEEE Communications Society (ComSoc) - notably IEEE Future Networks Initiative

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for which he currently serves as Distinguished Lecturer. He has served as Associate Editor for all the major ComSoc publications (IEEE Trans. Communications, IEEE J. Sel. Areas of Communications, IEEE Trans. On Wireless Communications, IEEE Trans. Mobile Computing) at various times and was previously selected for two stints as IEEE ComSoc Distinguished Lecturer (2013-2015, 2017-18). He was also elected to Executive Comm. Member for the National Spectrum Consortium

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initiative <https://urldefense.com/v3/https://www.cto.mil/5g/>;!!K-Hz7m0Vt54!!jh\_6GTHFcECL07qAza2OYVpsopghIUs4PjR4g0LEsbGTEFNputhKxMjwJP-UV6MRnUUfTpYCYFecd8BXA8mIHg\$ <<https://urldefense.com/v3/https://www.cto.mil/5g/>;!!K-Hz7m0Vt54!!jh\_6GTHFcECL07qAza2OYVpsopghIUs4PjR4g0LEsbGTEFNputhKxMjwJP-UV6MRnUUfTpYCYFecd8BXA8mIHg\$ >).