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VTC2015-Spring
GLASGOW
Innovating a Connected World

IEEE VTS

Thursday 14 May 2015 — Industrial Design Day

University of Strathclyde • Glasgow, Scotland

MathWorks

MATLAB and Simulink Platform for Next Generation Wireless System Development

10:30—12:00 Main Auditorium (b)

Professor Bob Stewart

MathWorks Professor of Signal Processing

University of Strathclyde, Glasgow, UK

Summary—In this session we will present recent advances in MATLAB and Simulink software and hardware support for the design of LTE and 5G mobile applications, software defined radio (SDR) systems, and advanced vehicular technologies such as radar-based driver assistance systems. The design flows presented in this session will use the functionality of MathWorks communications system design products for MIMO-OFDM system design, live signal generation and analysis with SDR hardware, HDL code generation of fixed-point designs for FPGA implementation. The session also features a keynote on Model-Based Design of vehicular technologies for the connected car equipped with mobile and wireless communications, environment sensing, and active driver assistance systems – technologies that will help lead to the era of autonomous systems that can sense, navigate, and communicate.

Objectives

Delegates attending will be able to see the MATLAB and Simulink design flows from concept to implementation and real world application. In particular, the presentations will provide knowledge and information on:

- Antenna-to-bits simulation of wireless systems
- LTE system design, verification, and implementation
- Real-time communications with software defined radio platforms
- Advanced MIMO based design and implementation
- Design and verification of phased array radar systems for driver assistance
- Model-based design approaches to system simulation and prototyping

Session Program

Keynote: Accelerating Wireless System Development
Don Orofino and Ken Karnofsky (MathWorks) (via video link)

LTE-Advanced Design, Waveform Generation, and Over-the-Air Testing with Zynq-Based SDR
Daniel Garcia-Alis, Iain Stirling, Neil MacEwen and Ousman Sadiq (MathWorks); and Martin Enderwitz, (University of Strathclyde)

Antenna-to-Bits Simulation for Wireless Receiver Design
Mike McLernon and Houman Zarrinkoub (Mathworks) (via video link)

Design of FMCW Radars for Vehicular Active Safety Applications
Mark Willerton (MathWorks)

HDL Coder Implementation of an LTE OFDM Modulator and Detector
Ross Elliot (University of Strathclyde) and Garrey Rice (MathWorks)

Polynomial Matrix Decomposition Tools for Broadband MIMO and Array Processing
Stephan Weiss and Keith Thompson (University of Strathclyde); John McWhirter (Cardiff University); and Ian Proudler (Loughborough University)