Center for Wireless Technology Eindhoven (CWTe)

CWTe 2021 Research Retreat

October 20, 2021

Abstracts of the talks and the speaker's bios.

How to become a robot
- Dirk Heylen (UT)

Abstract:

In this talk I want to focus on our research into tele-operation in different settings. How does it feel to control a robot and actually feel to be in control? In games, you may have controlled an avatar that represents you. When you play Mario, do you feel the pain when he is attacked by one of hideous monsters, be it spiders or other creatures that try to hurt him? What does it mean to live in different augmented/virtual worlds at the same time?

Speaker's bio:

Dirk Heylen is full professor Socially Intelligent Computing in the Computer Science Department of the University of Twente. His research on human-computer interaction encompasses many interaction modalities: conversational interfaces, virtual and augmented reality, intelligent virtual humans, social robots, haptic interfaces and more. He was trained as a computational linguist but has broadened his field of work in artificial intelligence to affective computing and social signal processing.

Link quality does not matter if you're too late...

- Kees Moerman (NXP)

Abstract:

Wireless technology is not only about link budget, signal to noise, Shannon limits etc. I would like to share some observations from our participation in current multi-company projects on Smart Mobility, especially on vehicle-infrastructure communication for real-time driving behavior. Here, next to communication reliability also latency is crucial. On the small scale, we will see an example in truck platooning, where O.S.-implied limitations impacted the reliability. On a larger scale, the difference between direct vehicle-infrastructure communication (using IEEE802.11p) will be compared to one based on telecom infrastructure (using LTE Uu). It is about the total system, not only about the wireless link...

Speaker's bio:

Kees Moerman received his MSc in Physics and Computer Science in 1990 at the University of Utrecht, the Netherlands. He has 30+ years of experience in embedded systems and (signal) processors, especially in the domain of communications. He worked as chief architect, innovation manager and MT member in departments of several larger and smaller semiconductor companies, leading multi-domain specialist teams in the area of SoC communication systems. His current work at the Automotive System Innovations group of NXP Semiconductors, where he worked on Smart Mobility from the perspective of the in-vehicle implementation, especially with respect to the vehicle-to-vehicle and vehicle-to-infrastructure communication standards.

The road to THz applications with societal relevance
- Dook van Mechelen (TU/e)

Abstract:

The number of THz applications is recently strongly increasing, but most of them have a hard time to be developed into a successful product. In this lecture, I will discuss the road towards such products, starting at the choice of a THz application with societal relevance and leading to industrial acceptance, production and market penetration. Hereto, I will guide the audience through aspects of market opportunities and business aspects of THz technology, via signal processing and sensor design using basic optics, physics and THz science, to developing (field) demonstrators that are validated by relevant stakeholders.

Speaker's bio:

Dook van Mechelen received his M.Sc. degree (with honors) in Physics at Vrije Universiteit Amsterdam in 2005 and earned his PhD in experimental Condensed Matter Physics from the University of Geneva, Switzerland, in 2010. From 2011 until 2020, Dook worked at ABB Corporate Research, Switzerland, where his research matured THz spectroscopy for sensing applications. In 2020, Dook was appointed Associate Professor in both the Signal Processing Systems and Integrated Circuits groups at Eindhoven University of Technology (TU/e) where his research goal is to explore new application areas of THz and IR spectroscopy with societal relevance.

Will cellular networks compete with wi-fi for indoor usage?
- Frans Panken (SURF)

Abstract:

In part driven by the available spectrum for private usage, 5G network products are offered for both public and private solutions. The technical trends in the front-haul of the 5G network architecture make it possible that offering such a service is not restricted to mobile network providers. This presentation explains the possibilities and trends for using 5G networks for private solutions and discusses objectives that need to be resolved such that 5G can compete with Wi-Fi for indoor usage. It also explains the trends and opportunities for facility managers and neutral hosts to offer such a service.

Speaker's bio:

Frans Panken received his MSc in applied mathematics from the University of Twente and received a PhD in computing science from the Radboud University Nijmegen. During his job as a network architect for Lucent Technologies, he received the prestigious golden and silver Bell-Labs awards. Since 2010, Frans works as a specialist in wireless networks at SURF, the Dutch organization for National Research and education networks.

(Low cost, low power IoT connectivity)
- Maarten Engelen (Hiber)

Abstract:
To be added

Speaker's bio:

Maarten Engelen is CTO and co-founder of Hiber (https://hiber.global/)