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Communications Enabling Shared Understanding



Call for Papers

Selected Areas in Communications Symposium

Access Networks and Systems and Powerline Communications Track

Track chair

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Scope and Topics of Interest

The rise of new services and the definition of novel networking paradigms always inspire researchers to investigate solutions for Access Networks and Systems that continue to be one of the hottest topics in the communication and networking fields. This is due to the evolution of systems and technologies and these come together to create technological challenges in the access domain. Advances in Voice over IP (VoIP), conventional and ultra-high-definition video, multimedia including virtual reality (VR) and immersive technology have significantly impacted the access segment of service-provider networks. Moreover, many access networks today terminate on multiple home devices. This has led to a need for home networks that are designed for a blend of multi-computer Internet access, multi-platform entertainment, and voice support. The evolution towards multi-service platforms and the emergence of a spectrum of new IP-based applications are fuelling more demand for bandwidth. Broadband access utilizes a variety of transmission media and systems, such as twisted-pair copper-based systems (xDSL), coaxial-cable plants, fiber-based solutions (passive and active optical networks), wireless systems (Wi-Fi, WiMAX, and cellular technologies) and hybrid combinations of these. Various protocols are also required to support both downstream and upstream traffic. Understanding the performance characteristics of all the technological ingredients of tomorrow's access networks/systems is critical for delivering the desired Quality of Service (QoS) to the end users.

Power Line Communication (PLC) systems have significantly evolved in the last decade, where their bit-rate and robustness have significantly increased. Accordingly, narrowband (NB) PLC has become the most widely employed technology for Smart Metering in many regions, and broadband (BB) PLC has proven to be a feasible solution for enabling high data-rate applications like in-home and small-office networking and multimedia content delivery. PLC is a natural choice for Smart Grid (SG) communications and can play an important role in Internet of Things (IoT) applications, where it can complement radio technologies in many

scenarios, improving coverage and robustness. PLC can also integrate with other wireless technologies like visible light communications (VLC), providing the uplink channel. These hybrid solutions add interesting research problems to the classical catalogue of PLC challenges. The aim of the Access Networks/Systems & Power Line Communications track is to bring together researchers from both academia and industry in order to have a forum for discussion and technical presentations on the recent advances in these fields.

Topics of interest include, but are not limited to, the following:

Power Line Communications

- Cognitive and cooperative communications
- Cross-layer optimization and service integration
- Experience from field trials and large scale PLC roll-outs
- Layer 2 (switching) and Layer 3 (routing) techniques in PLC systems
- MIMO, modulation, coding and signal processing for PLC
- Multiple access and protocols for PLC
- Network planning, optimization and management
- PLC Channel characterization, channel modelling and emulation
- PLC for the Smart Grid, in-building, access and in-vehicle networks
- PLC modem and low level design
- Signal coupling and EMI issues in PLC
- Standardization and regulation

Access Networks/Systems

- 5G and beyond 5G front/mid-haul networks
- Access network management aspects
- Access network survivability and security
- Applications (video streaming/VR/Immersive Technology etc.)
- Flexible/on-demand access networks (flying platforms)
- Free-Space Optical-Access (components, systems, and networks)
- FTTx and Passive/active optical systems and networks (PONs and AONs)
- Home/building/neighborhood area networks
- Integrated/hybrid wired/wireless access networks protocols
- Hybrid Fiber Coaxial (HFC) systems and networks
- Municipal and community networks
- Network virtualization for access
- Networked appliances (Internet of Everything)
- New technologies and architectures in access networks
- Optical-wireless integration and radio over fiber
- Quality of Service (QoS): characterization and provisioning
- Service convergence and multimedia networks
- Standardization and regulations
- Synchronization (time & frequency) support in the access
- Twisted pair copper systems and networks; xDSL

Submission Guidelines

The IEEE ICC 2020 website (icc2020.ieee-icc.org) provides full instructions on manuscript format and how to submit a manuscript. You will select the desired symposium/track when submitting your manuscript.