Centro di Eccellenza per l'Ingegneria dell'Informazione, della Comunicazione e della Percezione

Internal Workshop 16
CEIICP – Centre of Excellence for Information, Communication and Perception Engineering
Scuola Superiore Sant'Anna, Pisa

15th – 16th November 2010

PROGRAMME

15th November 2010

Room 10 B – PLENARY SESSION – General Presentations

8.50 Introduction - Giancarlo Prati

MACRO-AREA: "COMMUNICATION" (CHAIR: PIERO CASTOLDI)

OPTICAL AMPLIFICATION AND SENSING (FABRIZIO DI PASQUALE)

9.00 Fabrizio Di Pasquale **Recent Developments on Distributed Optical Fiber Sensors and Integrated Optics**
We review recent achievements on Raman and Brillouin based optical fiber sensors for long-range and sub-meter distributed measurement as well as new results on integrated optical devices for telecom and sensing applications

PHOTONIC TECHNOLOGIES (GIAMPIERO CONTESTABILE)

9.30 Giampiero Contestabile **Photonic Technologies**
This is an overview on the activities ongoing in the newly established Photonic Technologies Area

OPTICAL COMMUNICATION SYSTEMS (ERNESTO CIARAMELLA)

10.00 Ernesto Ciaramella **Recent Results and Research Activities in Optical Systems**
We review the main technical achievements and ongoing activities in the optical system area. We specifically cover the areas of performance monitoring in optical transport systems, WDM PON access solutions, Radio-over Fiber and Free Space Optics systems.

10.30 – 11.00 Coffee break

OPTICAL NETWORKS AND SERVICES (PIERO CASTOLDI)

11.00 Piero Castoldi   **Research Framework for the Area of Networks and Services**
We present the vision and research objectives concerning evolution of wavelength switched optical networks (WSON), energy aspects in networking, multi-hop wireless extensions of wired connections, topology definition for distributed computing based on interconnection matrices.

DIGITAL PHOTONICS (ANTONELLA BOGONI)

11.30 Antonella Bogoni   **Overview on Digital Photonics Area**
Recent advances on digital photonics for optical communication, based on mature technologies and new integrated devices will be reviewed. Innovative ultra-fast result for 640 Gb/s optical processing will be summarized. Finally new schemes of RF photonic generation/detection for fully digital radar systems will be presented.

ULTRA-FAST ALL-OPTICAL SUBSYSTEMS (LUCA POTÌ)

12.00 Luca Potì   **Ultra-Fast All-Optical Subsystems Research Activities**
Main drivers for research activities will be considered together with new bets on future possible topics. Best outcomes will be highlighted starting from highly efficient coherent transmission systems and ranging over coding techniques for biophotonic imaging subsystems.

OPTICAL COMMUNICATION THEORY & TECHNIQUES (ENRICO FORESTIERI)

12.30 Enrico Forestieri   **Research Activities on Optical Communication Theory and Techniques**
Overview of recent activities on 100 and 400 Gbs systems

13.00 – 14.00 Lunch

MACRO-AREA: "INFORMATICS" (CHAIR: GIORGIO BUTTAZZO)

REAL-TIME SCHEDULING AND RESOURCE MANAGEMENT (GIORGIO BUTTAZZO)

14.00 Giorgio Buttazzo   **Research Overview on Real-Time Systems**
This presentation gives a brief overview of the main research directions of the RETIS Lab, focusing on real-time scheduling and resource management. Moreover, it illustrates the ongoing projects and collaborations.

REAL-TIME NETWORKS (PAOLO PAGANO)

14.30 Paolo Pagano   **Progress Report on Real-Time Networks**
This presentation briefly reports about the main activities on real-time networks with a strong emphasis on WSN. The running projects in Intelligent Transportation Systems are discussed; the actual developed prototypes and their performances are commented.

REAL-TIME OPERATING SYSTEMS (GIUSEPPE LIPARI)

15.00 Giuseppe Lipari   **Challenges in Operating System Support for Time-Sensitive and Virtualised Applications on Future Multi-Core and Many-Core Systems**
An overview is made on the research activities going on at the RETIS in Operating System support for time-sensitive and virtualised applications on future multi-core and many-core systems.

EMBEDDED SYSTEMS DESIGN (MARCO DI NATALE)

15.30 Marco Di Natale   **Correct and Efficient Implementation of Functional Models into Complex Embedded Architectures**
With model-based design, a software architecture is becoming the product of automation tools. The SW implementation of a model is subject to contraints and must be optimized with respect to performance and resource utilization.

16.00 – 16.30 Coffee break

MACRO-AREA: "PERCEPTION" (CHAIR: CARLO ALBERTO AVIZZANO)

COMPUTER GRAPHICS AND VIRTUAL ENVIRONMENTS (FRANCO TECCHIA)

16.30 Franco Tecchia   **An Overview of the CG&VE Area Activity**
The presentation will summarize the ongoing research activities within the area, and the project address by the group, illustrating the overall rationale behind the research directions.

INTELLIGENT AUTOMATION SYSTEMS (CARLO ALBERTO AVIZZANO)

17.00 Carlo Alberto Avizzano   **Intelligent Automation Systems**
The relevant research lines and the major research results achieved within the Year 2010 will be summarized and discussed. The presentation will cover the three internal research groups of the Area: Skills, Mobile Robotics and Steel division.

HUMAN-ROBOT INTERACTION (ANTONIO FRISOLI)

17.30 Antonio Frisoli   **Overview of Research in the Area of Human Robot Interaction**
In this talk an overview of the research activities within the HRI area will be presented, with an outline of the main scientific results and of the current plan of research.

Room 27A– PARALLEL SESSION 1 – MACRO-AREA: "INFORMATICS"

REAL-TIME SCHEDULING AND RESOURCE MANAGEMENT (GIORGIO BUTTAZZO)

9.30 Mirko Ferrati

Cache-Aware Optimization of Synchronous Dataflow Programs
We propose a novel algorithm that avoids cache misses in a dataflow program. It computes the maximum buffer size during a single period and produces a schedule that prevents the buffer overflowing the cache.

9.40 Giulio Mancuso

Model Predictive Control (MPC) via Primal Dual Interior Point Method: Implementation in Massively Parallel Processor
MPC is one of the most used control in industrial application. We investigate how GPU allow to speed up computation such that it can also be used for fast applications.

9.50 Marko Bertogna

Optimal Scheduling with Variable Preemption Overhead
A method is presented to minimize the preemption overhead of a sporadic task system by properly selecting the preemption points. The method is optimal, in that it finds a feasible schedule when there exists any.

10.00 Gianluca Franchino

An Energy-Aware Algorithm for TDMA MAC Protocols in Real-Time Wireless Networks
We present an energy-aware algorithm for MAC protocols in wireless distributed systems with real-time constraints. Under this framework, each node can adapt its bandwidth equirements to balance performance versus energy consumption.

10.10 Francesco Prosperi

Energy-Aware Packet and Task Co-Scheduling for Embedded Systems
This work explores how to efficiently reduce the power consumption of real-time applications with constrained resources. A combined DVS-DPM approach with a reduced complexity is proposed to make use of on-line strategies for embedded systems.

10.20 Mauro Marinoni

Adaptive TDMA bus Allocation and Elastic Scheduling: a Unified Approach for Enhancing Robustness in Multi-Core RT Systems
Making the bus aware of the application requirements allows to dinamically modify the assignement of this shared resource. This approach allows to improve performancies and better fit the HW real requirements instead of overpessimistic assumptions.

10.30 – 11.00 Coffee break

REAL-TIME OPERATING SYSTEMS (GIUSEPPE LIPARI)

11.00 Juri Lelli

An Experimental Comparison of Global vs Partitioned and Deadline vs Priority Real-Time Scheduling on Multicore Systems
An experimental comparison among various multiprocessor real-time scheduling algorithms is performed. The presented results provide a comprehensive view of the performance achievable by the different schedulers under various workload conditions.

11.10 Giuseppe Lipari **A Framework for Hierarchical Scheduling on Multiprocessors: from Application Requirements to Run-Time Allocation**
In this paper we present three novel contributions to hierarchical scheduling for multiprocessor systems: Bounded-Delay Multipartition interface; exploring the schedulability region of a real-time application; The Fluid Best-Fit allocation algorithm.

11.20 Dario Faggioli **The Multiprocessor BandWidth Inheritance Protocol**
Similarly to priority inheritance, M-BWI reduces priority inversion in reservation-based multiprocessor systems. It is particularly suitable to open systems, where tasks dynamically arrive and leave, and their temporal parameters are only partially known.

11.30 Dhaval Giani **Providing Performance Guarantees to Virtual Machines using Real Time Scheduling**
We propose a novel mechanism to provide network QoS guarantees for Virtual Machines. This proposal uses real-time scheduling allowing us finer control over not just the throughput but also on activation latencies to external events.

11.40 Tommaso Cucinotta **The IRMOS Scheduler**
A brief overwiev on IRMOS Project and its Real-Time Scheduler.

EMBEDDED SYSTEMS DESIGN (MARCO DI NATALE)

11.50 Benjamin Kuch **Wearable Apnea Dive Computer for Continuous Plethysmographic Monitoring of Oxygen Saturation and Heart Rate**
Presentation of a novel wrist-mounted apnea dive computer. The device is able to measure, record and display transcutaneous oxygen saturation, heart rate, plethysmographic pulse waveform, depth, time and temperature during breath-hold dives.

REAL-TIME NETWORKS (PAOLO PAGANO)

12.00 Riccardo Pelliccia **On Board Unit Hardware Design for VANETs.**
VANETs are attractive for a wide range of applications such as car status monitoring for driver safety. We present our OBU platform based on an ARM processor, CAN bus device and IEEE802.11 module.

12.10 Marco Ghibaudi **Hardware Design for Wireless Camera Networks**
We present our wireless camera network hardware solution developed within the IPERMOB project. The IPERMOB board guarantees wireless communications and on-board image processing for supporting low-cost Intelligent Transportation Systems.

12.20 Besem Abid **Wireless Localization in IEEE802.15.4 Networks**
Wireless localization services are attractive for a wide range of applications. We present a localization system for mobile nodes which is based on the IEEE802.15.4 standard.

12.30 Stefano Bocchino **6LOWPAN Implementation and Routing Protocol Performance Evaluation**
In this presentation we first present our 6LOWPAN implementation into the ERIKA OS, then we compare SPEED and AODV routing protocols performance in such networks.

13.00 – 14.00 Lunch

14.00 Daniele Alessandrelli	**The MIRTES++ Middleware**

MIRTES++ will be the evolution of MIRTES, a real-time middleware for WSN currently offering data-,and code-centric services. MIRTES++ will add event-centric services, auto-configuration for dynamic network topology and support for IPv6 devices.

14.10 Claudio Salvadori   **The eDAQ++ Platform**

We present the new eDAQ platform, a C++ software solution for data acquisition and algorithms testing in embedded systems. Moreover, eDAQ++ enables the prototyping of imaging algorithms for Wireless Camera Networks.

14.20 Gabriele Cecchetti   **Enhancement of QoS Support of HCCA Schedulers using EDCA Function in IEEE 802.11e Networks.**

This presentation illustrates performance obtained using a scheduler which exploits both HCCA and EDCA mechanisms to schedule traffic streams transmissions over WLANs networks.

16.00-18.00 – IAC Meeting – (Yellow Room)

Room 10B – PARALLEL SESSION 2 – MACRO-AREA: "PERCEPTION"

HUMAN-ROBOT INTERACTION (ANTONIO FRISOLI)

9.00 Marco Fontana

TRACKHOLD: Novel Device for VR Rehabilitation.
TRACKHOLD is a novel mechanical tracker designed for rehabilitation therapy in virtual environments. The device is able to acquire movements and to passively compensate the user forearm weight. Design and experimental tests are presented

9.10 Massimiliano Solazzi

A New Method for the Computation of Position Accuracy in Parallel Manipulators
A new method based on screw theory has been developed for calculating the pose error in spatial parallel manipulators with joint clearances. In several cases the procedure gives the exact analytical solution to the problem

9.20 Rocco Vertechy

Human-Machine Interaction via Parallel Mechanisms actuated by Dielectric Elastomers
This presentation summarizes the results of the research activities conducted at PERCRO on the design, modelling, experimental characterization and control of innovative human-machine interaction devices based on Parallel Mechanisms and Dielectric Elastomers technologies

9.30 Umberto Olcese

BCI Interfaces for Rehabilitation and Communication
Brain Computer Interfaces represent a novel technology for aiding disabled patients and for rehabilitation. Here we present our preliminary efforts in integrating BCI and robotics for motor rehabilitation

9.40 Edoardo Sotgiu

Robotic Assisted Rehabilitation in Stroke Patients
A rehabilitation exoskeleton system and two VR applications are presented. This robotic platform helps the stroke patients to recover their upper limbs daily living skills.Preliminary experimental results with novel force-based controller are shown

9.50 Miguel Padilla-Castaneda

The Role of Embodiment and Body Ownership in Virtual Environments
A study of human body perception through the embodiment and ownership illusion of having a virtual hand as it's own body part is presented. Experiments were done in immersive, dynamic and multisensored VE sessions

10.00 Siqiao Li

Design of 3-dof fMRI Compatible Haptic Interface
We present the design of a novel fMRI compatible haptic interface with 3-dof parallel mechanism, based on electrical DC actuation, for the study of brain mechanisms of human motor control

10.10 Claudio Loconsole

On Visual Servoing of an Exoskeleton
The presentation will summarize the ongoing research activities within the BRAVO project. Future works about visual controlling of an exoskeleton are also presented.

10.30 – 11.00 Coffee break

INTELLIGENT AUTOMATION SYSTEMS (CARLO ALBERTO AVIZZANO)

11.00 Valentina Colla

Distribution Fitting through Genetic Algorithms
A GA-based approach is presented to the problem of finding a suitable statistical distribution of a series of observations of an unknown stochastic process: family and parameters of the d.d.p are estimated.

11.10 Marco Vannucci

Classification of Uneven Datasets
The classification problem is treated in databases where the patterns belonging to one class (in real-world applications often the "most interesting" class) are far less numerous than those belonging to the other classes.

11.20 Gianluca Nastasi

GA-based Multi-Objective Optimization applied to a Logistic Problem
Multi-Objective Optimization is the process of jointly optimizing many conflicting objectives subject to constraints: among other techniques, Genetic Algorithms can be successfully applied to this purpose. A case study is presented and discussed.

11.30 Antonella Dimatteo

Fault Diagnosis through Parametric Characterization, Neural Networks and Statistics
A model-based fault diagnosis system is presented, which exploits neural networks for modeling the standard operating conditions of the plant and non parametric statistics for analyzing deviations to the aim of detecting anomalies.

11.40 Alessandro Filippeschi

Evaluation of Learning Accelerators for the SPRINT Rowing Training System
Within the SKILLS project, some strategies for training rowing technique, energy management and team coordination are being evaluated. This work shows the experiments established for this evaluation along with the results obtained so far.

11.50 Vittorio Lippi

A Digital Model for Three Ball Cascade Juggling
We present a model of juggling and we test in a virtual simulation. we based it on human behavior focusing on the prediction and the analysis more than on the production of a controller.

12.00 Walter Lucetti

Combination of Classifiers for Indoor Room Recognition
Description of Combination of Classifiers approach to the problem of topological localization of a mobile robot in indoor environment using stereoscopic visual information. The system was developed for Image CLEF 2010 Robot Vision Task challenge.

12.10 Massimo Satler

An Admittance Controller for a Mobile Haptic Interface
We present the preliminary results and the control system of a Mobile Haptics Interface, that uses the coordination of numerically controlled wheel torques to render forces/torques to the user.

12.20 Leonard Johard

Real-Time Analysis of Rowing for Training
Analysis of rowing data using Machine Learning Techniques

12.30 Paolo Tripicchio

Embedding the Electronics of the Rowing System.
This project aims to reduce the complexity of the previous acquisition system and improves the sample frequency granting a better resolution for the system signals.

13.00 – 14.00 Lunch

COMPUTER GRAPHICS AND VIRTUAL ENVIRONMENTS (FRANCO TECCHIA)

14.00 Franco Tecchia

The "Ghost Helper": a Video-Based Approach to Collaborative AR
The presentation summaries the results of our research on a wearable AR system dedicated to remote maintenance, and how user-centered design is key for an effective development process.

14.10 Paolo Gasparello

Geometry Compression for 3D Streaming
The presentation describe the state-of-the-art of 3D mesh compression, and how this techniques can be applied to meshes inferred from generic OpenGL command sequences, typically generated by interactive applications.

14.20 Marcello Carrozzino

Procedural Modelling of 3D Trees through a Hybrid Space Colonization Algorithm
The presentation describes a novel approach to the procedural generation of 3D models of trees suitable for real-time rendering, based on a combination of space colonization algorithms and image based extraction of features.

14.30 Marcello Carrozzino

***Virtually* Preserving the Intangible Heritage of Artistic Handicraft**
A project is presented aimed at the communication of ancient techniques of handicraft through a 3D virtual interactive platform, offering a contribution to preserve this heritage by means of a virtual experience.

14.40 Daniele Giannetti

Modern VR Content Handling
The presentation describe the work in progress in the group on the topic of VR authoring, and in particular the development of a kernel scene-graph library for the combined handling of real-time graphics and physics.

16.00-18.00 – IAC Meeting – (Yellow Room)

Blue Room – PARALLEL SESSION 3 – MACRO-AREA: "COMMUNICATION"

PHOTONIC TECHNOLOGIES (GIAMPIERO CONTESTABILE)

9.00 Nicola Andriolli

Design of InP-based Photonic Integrated Circuits
In this talk the advantages of a generic photonic integration technology are briefly reviewed, and the masks designed within JePPIX European Platform for the realization of Indium-Phosphide photonic integrated circuits are presented.

9.10 Claudio Porzi

Tunable Thermo-Optic Add/Drop Filters With Silicon Micro-ring Resonators: Technology and Fabrication Process
Current technology for tunable add/drop filters based thermal heating in silicon micro-ring resonators is reviewed. Fabrication process and mask layers requirements for prototype implementation with the European silicon photonics platform "ePIXfab" are also discussed.

9.20 Francesca Bontempi

Tunable Thermo-Optic Add/Drop Filters With Silicon Micro-ring Resonators: Simulations and Mask Layout
The first simulations of a tunable thermo-optic microring resonator based add/drop filter in high index contrast silica waveguide are presented. The objective is the design of a photolithographic mask for device's prototype fabrication.

9.30 Stefano Faralli

III-V/ Silicon Photonics for the fabrication of Photonic Integrated Circuits
Bonding for integration of III-V opto-electronic components on the top of silicon-on-insulator waveguide circuits is presented. This technology will be used for the fabrication of designed Photonic Integrated Circuits in the nanotech-facilities of UCSB.

OPTICAL AMPLIFICATION AND SENSING (FABRIZIO DI PASQUALE)

9.40 Paolo Pintus

Tapers Design Optimization in Hybrid Silicon Amplifiers
Hybrid lasers and SOAs can be realized by combining optical gain from III-V material with silicon waveguides. In the present work we study the taper design, witch can significantly affect SOA performance.

9.50 Md. Sohel Mahmud Sher

Modal Analysis of LiNbO3 Ring Resonators for Fast Electro-Optic Switching.
Microring resonator in lithium niobate is a very attractive choice for fast electro-optic tuning. We show the results of modal analysis of LiNbO3 based microring resonators produced through crystal ion slicing and wafer bonding technique.

10.00 Valentina Donzella

Design of Silicon Slot Micro-Ring Resonators for Unlabelled Detection of Immunological and Tumor Markers
Label free biosensors are promising building blocks for Lab-on-a-chip. Here we present a silicon-based sensor structure, which can improve sensor sensitivity and detection limit in order to detect specific molecule in biological samples.

10.10 Tiziano Nannipieri

Long-Range Raman Based Distributed Temperature Sensors using Cyclic Simplex Codes
A novel coding approach for enhancing the SNR of Raman Distributed Temperature Sensors is proposed. The coding and decoding algorithms for Simplex cyclic code are presented and the expected performance are verified by numerical simulations.

10.20 Marcelo Soto	**Long-Range Distributed Optical Fiber Sensors for Sub-Meter Resolution Based on Simplex-Coded Differential Pulse-Width Pair BOTDA**

Return-to-zero Simplex coding is combined with optical pre-amplification in a differential pulse-width pair BOTDA sensor for sub-meter strain/temperature measurements. Experimental results exhibit a spatial resolution of ~40 cm along 56-km distance with 1.1°C temperature resolution.

10.30 – 11.00 Coffee break

OPTICAL COMMUNICATION SYSTEMS (ERNESTO CIARAMELLA)

11.00 Luca Banchi

Highly improved Uplink Transmission in Bidirectional PONs by using a RZ Direct-Modulated R-SOA

We experimentally demonstrate unmatched resilience to carrier and signal backscattering in central light seeded PONs. By using RZ modulated R-SOA as uplink transmitter, we obtained error free uplink communications at 10 dB signal-to-crosstalk level.

11.10 Marco Presi

Stabilization of Self-Seeding of R-SOAs as Directly-Modulated Transmitters for WDM-PONs

We present an all-optical and passive system to avoid instabilities in directly-modulated self-seeded R-SOAs. System performance of 32 channels WDM-PON is reported

11.20 Raffaele Corsini

Highest-ever Availability in a Transparent 1.25 Gb/s Free Space Optical Communication Link over 320 m

We realized and monitored over 72 hours a 1.25 Gbit/s FSO link, 320 m long, using novel transparent terminals. For the first time, we obtained 99.9992% availability and derived a statistical analysis of BER and scintillation index

11.30 Pallab Choudhury

Flexible Radio-over-Fibre Signal Distribution for In-building Networks based on Modulated ASE Noise

A new RoF architecture has been proposed based on modulated ASE noise of SOA through XGM. Wi-Fi (802.11 a/g) and 64-,128-,256- QAM signals have successfully transmitted through both wired and wireless link.

11.40 Andrea Chiuchiarelli

Optical Carrier Recovery with Reduced Phase Error in a PSK Homodyne Coherent System by Means of 8b10b Line Coding.

We describe a novel technique to mitigate data-to-phaselock crosstalk impairments in a homodyne coherent optical system, using 8b10b encoding of transmitted data. Low-penalty transmission of 10Gb/s BPSK signal over 215km SMF is demonstrated.

DIGITAL PHOTONICS (ANTONELLA BOGONI)

11.50 Francesco Laghezza

Full Digital Radar Transceiver Modelling and Simulation

In this work the basic concept of the full digital radar signal model has been introduced. Therefore a radar simulator has been implemented via software considering both optical electrical devices and distortion.

12.00 Paolo Ghelfi

A New Architecture for a Photonics-Based Radar Transmitter

A novel RF-generating scheme exploits a commercial optical IQ modulator to allow using a single mode-locking laser for both radar transmitter and receiver, making the solution attractive for immediate and practical implementation in photonics-assisted transceivers.

12.10 Gianluca Berrettini

Variable Optical Buffer for Digital Photonic Functionalities
An optically controlled variable optical buffer (VOB) based on a re-circulating fiber loop is proposed and demonstrated. N-bit optical dynamic RAM, multi register matrix and shift register functionalities are introduced and validated as its application.

12.20 Francesco Fresi

All-Optical Self-Synchronizing Scheme for Contention Resolution in Asynchronous Optical Packet Switched Networks
A continuously tunable, optically-controlled, variable optical delay line based on Dynamic Brillouin Grating is exploited for automated synchronization of switching signals within an Optical Packet Switching node. Error-free, all-optical asynchronous contention resolution is demonstrated.

ULTRA-FAST ALL-OPTICAL SUBSYSTEMS (LUCA POTÌ)

12.30 Mirco Scaffardi

Characterisation of Phase and Amplitude Profile of Optical Pulses Based on Optical Time- and Frequency-Domain Differentiation
Two techniques for real-time, single-shot phase and amplitude characterisation of an optical signal are presented. The two techniques exploit time-domain and frequency-domain differentiation. Temporal resolution can be increased by combining ultra-fast differentiation and optical sampling.

12.40 An Nguyen

Fine Granularity ROADM Node Testbed for OTDM and WDM based Subnetworks towards 100 Gbps Interconnection and beyond
New concept, architecture and prototype for ROADM gateway node are proposed. The ROADM acts as a "translator" between network segments based on OTDM and WDM systems exploiting different modulation formats to transport data streams.

12.50 Gianluca Meloni

Towards 448 Gb/s Coherent Optical System
Complex QAM modulation formats in optical coherent system are investigated and experimentally validated. Several promising approaches have been considered in order to implement a 448Gb/s transmission system.

13.00 Luca Ascari

Coding Techniques for NIR spectroscopy
The presentation covers the ongoing activity in cardiac near infrared spectroscopy (NIRS), and the intermediate results of simulations aimed at validating a new approach to NIRS, called WS-CDM (wavelength and space code division multiplexing).

13.00 – 14.00 Lunch

OPTICAL NETWORKS AND SERVICES (PIERO CASTOLDI)

14.00 Nicola Sambo

Lightpath provisioning in Multi Rate Optical Networks
Lightpath provisioning considering cross-phase modulation between OOK 10Gb/s and phase modulated higher rate (e.g., 100Gb/s) signals is proposed for multi rate optical networks. Proposed schemes are evaluated also in an experimental testbed.

14.10 Alessio Giorgetti

Path State Based Update of PCE Traffic Engineering Database in WSONs
Using the proposed path-state approach for updating the TED of the PCE in GMPLS controlled WSONs strongly reduces both the lightpath blocking probability and the control plane overhead with respect to conventional link-state updating approaches.

14.20 Molka Gharbaoui	**Preserving Confidentiality in Multi-domain PCE-based MPLS Networks**
	An experimental evaluation of a two-step path computation authorization scheme is presented. It aims at preserving confidentiality in PCE-based multi-domain networks, based on peer behavior analysis and attack pattern detection.

14.30 Isabella Cerutti **Link Sleep Mode for Energy Efficient GMPLS Networks**
A strategy for selecting the links to be set in sleep mode and re-routing the lightpaths is proposed for WDM networks with GMPLS control plane. Considerable power savings are achieved without affecting the blocking.

14.40 Luca Valcarenghi **Impact of Modulation Formats on ONU Energy Saving**
This paper evaluates experimentally how NRZ and Manchester modulation formats impact the energy saved in GE-PON

14.50 Karim Torkmen **Multi-hop Connection Extension for IP-based Mobility Management**
This work proposes a PMIP protocol extension to support IP-based communications in areas not covered by fixed infrastructure by defining the Proxy Mobile Node as a traffic relay and enabler of multi-hop connections.

15.00 Pier Giorgio Raponi **Logical Topology Discovery in MPI based HPC Codes**
This work shows the steps toward an online topology discovery in HPC codes. Starting from offline MPI communication pattern analysis it is possible to understand recurrent behaviors and apply this knowledge to real time analysis.

OPTICAL COMMUNICATION THEORY & TECHNIQUES (ENRICO FORESTIERI)

15.10 Marco Secondini **Digital Coherence Enhancement in Coherent Optical Receivers**
We present a novel technique to cancel phase noise in coherent optical systems. This technique highly reduces the linewidth requirements for transmit and receive lasers in uncompensated links, both for single-carrier and OFDM systems.

15.20 Tommaso Foggi **Algorithms for M-QAM Coherent Optical Systems**
A set of algorithms for the electrical processing of QAM coherent optical transmissions, i.e. carrier frequency offset and phase noise compensation, blind equalization, has been designed and implemented in the 224 Gb/s demonstrator.

16.00-18.00 – IAC Meeting – (Yellow Room)