MASTEAM

MASTER IN APPLIED
TELECOMMUNICATIONS AND
ENGINEERING MANAGEMENT
MASTEAM

- Master in **Telecommunications Engineering**, with emphasis in
  - Internet of Things
  - Smart Cities
  - Mobility – 5G
  - Management

Areas: sensors, embedded systems, radiocommunications, optical communications, signal processing, IP protocols and services, network security, programming, data analytics and big data, project management, business plans

- **Official** program, accredited by Ministerio & Generalitat
  - Access to PhD program
  - Grants
MASTEAM

- “Mejores 5 másteres de Ingeniería en España 2016”
  http://www.elmundo.es/mejores-masters/ingenieria.html

Applied Telecommunications and Engineering Management  5º puesto

Destaca por sus contenidos actualizados y punteros, la activa metodología de aprendizaje, la internacionalización y la adaptación a las necesidades de la industria.

Universidad Politécnica de Cataluña
Sede: Barcelona
Teléfono: 934 137 056
http://eetac.upc.edu/en/masteam
Nº de plazas: 30
Duración: 60 ECTS
Precio: 3.286 Euros
MASTEAM

- "Master of Excellence" grants by FCLP
  - Best candidate receives 5000 euros grant

http://www.fundaciocatalunya-lapedrera.com/es/content/becas-m%C3%A1steres-de-excelencia

**Ingeniería y Arquitectura**

Telecommunication engineering and management (MASTEAM) - **UPC**
Nuclear engineering - **UPC**
Ingeniería de telecomunicaciones - **UPC**
Estudios Avanzados de Arquitectura (MBArch) - **UPC**
Energy Engineering - **UPC**
Modelling for science and engineering - **UAB**
Visión por Computador - **UAB**

**Ciencias**

Sound and music computing - **UPF**
Interdisciplinary MSC in cognitive systems and interactive media - **UPF**
Faculty & Research

- World-class research in the areas of the master

Versions: [draft-toutain-lpwan-ipv6-static-context-hc]
00 01 02 03

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March 02, 2017

LPWAN Static Context Header Compression (SCHC) and fragmentation for IPv6 and UDP
draft-ietf-lpwan-ipv6-static-context-hc-01

Abstract

This document describes a header compression scheme and fragmentation functionality for IPv6/UDP protocols. These techniques are especially tailored for LPWAN (Low Power Wide Area Network) networks and could be extended to other protocol stacks.
Faculty & Research

- World-class research in the areas of the master

UPC patents system for cardiovascular pre-diagnosis—in under a minute—based on contact with user’s hands or feet

The Universitat Politècnica de Catalunya (UPC) has patented an affordable, easy-to-use electrocardiograph that can provide a cardiovascular pre-diagnosis in less than a minute. It is the first system to measure both the electrical activity of the heart (electrocardiogram) and its mechanical activity (arterial pulse wave) based on data collected via two metal sensors in contact with the user’s hands or feet. The prototype has already been granted patents in Spain, the United States and China, and applications have also been filed in Europe, Japan, Korea and India. The system will be presented next week at the Mobile World Congress, along with other projects that reflect the University’s technological capabilities.

27/02/2017

Cardiovascular diseases caused three out of every ten deaths in 2012. According to the World Health Organization, that translates into a total of 17.5 million deaths. Many of these tragic outcomes could be prevented through early diagnosis, but the equipment used for cardiovascular diagnosis is usually complex to use and unaffordable for most people.

Now, researchers with the UPC’s Instrumentation, Sensors and Interfaces (ISI) Group, led by Ramon Pallàs, have patented an electrocardiograph that provides a cardiovascular pre-diagnosis in less than 60 seconds. The results are more accurate than those offered by existing devices and can be communicated to medical professionals from any place where there is mobile phone coverage.
Alumni

- LinkedIn: 170+ contacts
Alumni

- LinkedIn: 170+ contacts
Structure

● **60 ECTS**
  ■ 1 year at full-time, or 1.5, 2 or more at part-time
  ■ 1 ECTS = 9h of classroom activities + 16 h of autonomous activities

● **Mandatory** contents: 15 ECTS

● **Optional** contents: 33 ECTS
  ■ Total optional offer: 42 ECTS

● **Master Thesis**: 12 ECTS
  ■ Performed during 2\textsuperscript{nd} semester (full-time) or later
Semester 1A (14 weeks)

- Optimization for Applied Engineering Design (3)
- Network Engineering (3)
- Next Generation Wireless Communications and IoT (3)
- Sensors and Interfaces (3)
- ICT-based Entrepreneurship (3)

1A1 (7 weeks)

- Optical Networks for Cloud-Based Services (3)
- IoT & Ubiquitous IP (3)
- 5G Mobile Network Planning (3)
- Applied Image Processing (3)
- Body Sensor Nodes (3)
- Augmented Reality & Smart Objects (3)

1A2 (7 weeks)

- Network Security Authentication & Authorization (2)
- Low-power Systems with Energy Harvesting (3)
- Software Defined Radio (3)
- Big Data & Data Mining (6)
- Master Thesis (12)

Semester 1B (14 weeks)

- Service Engineering (3)
- Creativity & Engineering (3)
- Project on ICT-based Business Models (3)

1B1

- Big Data & Data Mining (6)

1B2

- Master Thesis (12)

In parenthesis, the number of ECTS credits

Mandatory course

Optional course
Mobility, Double Degree, Internships

- **Master Thesis** in more than 30 institutions in Europe, China, Mexico…

- **Double Degree** agreements
  - 1 year MASTEAM + 1 year abroad = **2 master degrees**
    - University of L’Aquila (Italy)
    - Cranfield University (UK) – 8 different masters (automotive, aeronautical communications, etc)
    - Currently finishing agreements with KTH (Stockholm - SWE), IST (Lisbon - PT), Karlstad (SWE)…

- **Internships**
  - Up to 600h, paid
Internships / Cooperation with companies

- Master Theses, Internships

- Currently we have more demand from companies than available students!

- MASTREAM talks and presentations
  - Cellnex: SIGFOX technology, business models
  - Ficosa/Ide neo: Connected car, Project management
  - Ajuntament Barcelona: Smart City network, Security
  - Datumize: Dark Data and IoT
  - Schibsted: Networking in Container/Docker environments
  - … check the EETAC website!
QUESTIONS?

More info at https://eetac.upc.edu/en/study/masters-degrees/masteam
Optimization for Applied Engineering Design

- DEPT: ENTEL (3)
- Optimization with Engineering Applications
- Nature-Inspired Algorithms. Colonies and Swarms
- Biogeography-based techniques

Network Engineering

- DEPT: ENTEL (3)
- Introduction to large-scale dynamic systems
- Network models
- Competitive and cooperative systems
- Dynamic systems
1A1

● Next Generation Wireless Communications and IoT
  ➢ DEPT: TSC (3)
  ➢ 4G/5G networks
  ➢ Dense cell deployment: Small Cells, HetNets, Vertical HO
  ➢ Spectrum management: cognitive networks
  ➢ Cooperative communications: Network Coding
  ➢ WSN and Internet of Things

● Sensors and Interfaces
  ➢ DEPT: EEL (3)
  ➢ Signal chain design
  ➢ Sensor performance assessment
  ➢ Analog sensors and signal conditioning
  ➢ Digital sensors and their interfaces
  ➢ Signal chain design
1A1

- ICT-based Entrepreneurship
  - DEPT: OE (3)
    - Innovation models
    - Business models of ICT-based companies
    - Customer development. Lean startup concepts
    - Canvas analysis
    - Process analysis
    - Sales for ICT-based startups
1A2

- Next-Generation Optical Networks Infrastructures for Future Cloud-Based Services
  - *DEPT: TSC (3)*
  - Enabling technologies for advanced optical fiber-based networks
  - Optical systems for cloud computing and data centers interconnects
  - Enabling optical systems for energy-efficient optical networks
  - Control/Management plane for optical transport networks

- IoT and Ubiquitous IP
  - *DEPT: ENTEL (3)*
  - Internet evolution
  - Internet of Things: technologies and applications
  - Wireless experience enhancement
  - Mobility support
1A2

- **5G Mobile Network Planning**
  - *DEPT: TSC (3)*
  - Mobile system planning: coverage and capacity optimization
  - Green networks: spectrum and energy efficiency
  - HetNets
  - Self-Organizing Networks (SON)

- **Applied Image Processing**
  - *DEPT: TSC(3)*
  - Recent advances in 2D and 3D image capture and representation devices.
  - Next generation video coding standards for Ultrahigh-Definition and 3D systems
  - Efficient algorithms for image segmentation
  - Techniques for representation, description and analysis of color, motion and shape
  - Image processing software tools for application oriented design
1A2

- **Low-power Systems with Energy Harvesting**
  - *DEPT: EEL (3)*
    - Low-power embedded systems
    - Analog front and back ends
    - Power Management strategies
    - Battery management and energy supervision
    - Energy harvesting and power conditioning

- **Augmented Reality & Smart Objects**
  - *DEPT: AC (3)*
    - Hardware for augmented reality
    - Software and algorithms for augmented reality
    - Smart object typology
    - Applications
1B1

- **Service Engineering**
  - *DEPT: ENTEL (3)*
  - Introduction to networked services
  - Dimensioning of services
  - Provisioning of telecom services
  - Operations Management
  - Conclusions, Advanced topics and Future trends

- **Body Sensor Nodes**
  - *DEPT: EEL (3)*
  - Physiological and body position and movement sensors
  - Low-noise sensor interfaces
  - Interference reduction
  - Sensor node implementation (Laboratory project)
1B1

- Creativity & Engineering
  - **DEPT: OE** (3)
  - Problem solving and killer applications
  - Critical thinking and the role of the mind in learning
  - Promoting creativity and team leadership
  - Creative techniques

* Coordinated by Professor A. Elias (TSC)

- Big Data & Data Mining
  - **DEPT: AC** (6)
  - Storing big data
  - Processing big data
  - Tools and techniques to analyze big data
  - Automatic recognition of patterns in large data set
  - Recommender systems
1B2

- Network Security Authentication & Authorization
  - DEPT: ENTEL (3)
    - Security Introduction
    - Secure Storage of Credentials
    - Passwords/credentials auditing
    - User/service authentication
    - Authenticated services and credential sharing

- Software Defined Radio
  - DEPT: TSC (3)
    - Cognitive and Software Defined Radio
    - Cloud-RAN
    - Digital signal generation and processing strategies
    - Advanced high-efficient transceiver architectures
    - Linear and nonlinear characterization and compensation
1B2

- Project on ICT-based Business Models
  - **DEPT: OE (3)**
    - Planning activities to develop a new business model
    - Project management
    - Generation of an innovative idea (students project, first part)
    - Activity plan to develop a new business model (students project, second part)
    - Selling the project (students project, third part)