INFORMATION & COMMUNICATION TECHNOLOGIES

RESEARCH, DEVELOPMENT AND INNOVATION AT THE UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONA·TECH (UPC)

The **Universitat Politècnica de Catalunya·BarcelonaTech (UPC)** specializes in the areas of architecture, science and engineering, including Information and Communication Technologies (ICT). In this field, the main focus areas are:

- Big Data
- GIS
- Security
- Collaborative Internet
- Smart Learning
- Smart Cities
- User Experience
- Health
- Manufacturing
- Robotics

The UPC is the leading university in Spain in volume of research and technology transfer to companies, and has become one of the major hubs of knowledge in Southern Europe.

INFORMATION & COMMUNICATION TECHNOLOGIES

BIG DATA

- CONTROL PANELS AND DECISION SUPPORT SYSTEMS

- SOCIAL NETWORK ANALYTICS. INFLUENCE AND PROPAGATION. RECOMMENDATION SYSTEMS.

- REAL-TIME BIG DATA MANAGEMENT

- DATA GRAPHS

GIS

- ADVANCED APPS DEVELOPMENT. AUGMENTED REALITY

- GEOLOCATION AND TRACKING

- GEOGRAPHIC INFORMATION SYSTEMS. OPEN STREET MAP

SECURITY

- HIGH AVAILABILITY INFRASTRUCTURE

- LOGICAL SECURITY. AUDITS, PENETRATION TESTS FOR HETEROGENEOUS NETWORKS AND FORENSIC ANALYSIS

- BIOMETRY. AUTHENTICATION SYSTEMS AND IDENTITY MANAGEMENT

- DIGITAL IDENTIFICATION, ELECTRONIC SIGNATURE AND ENCRYPTION

- AUTOMATIC ANALYSIS TECHNIQUES FOR PATTERNS OF BEHAVIOUR

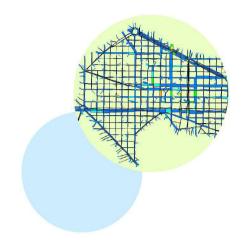- BIG DATA ANALYTICS IN FRAUD DETECTION

COLLABORATIVE INTERNET

- INTEGRATION OF SOCIAL NETWORKS INTO COLLABORATIVE ENVIRONMENTS

- MULTIMEDIA INFORMATION SYSTEMS

- P2P DISTRIBUTED SYSTEMS

- SOCIAL, SECURE, INCLUSIVE AND INTEROPERABLE APPS

SMART CITIES

- APPLICATIONS FOR ACTIVE MANAGEMENT AND TRAFFIC INFORMATION

- EMERGENCY DECISION SUPPORT SYSTEMS

- SMART MOBILITY

- SIMULATION AND OPTIMIZATION OF ENERGY EFFICIENCY

- CONTEXTUAL MOBILE APPS

SMART LEARNING

- E-LEARNING

- GAMIFICATION

- LEARNING ANALYTICS

USER EXPERIENCE

- HUMAN MACHINE INTERFACE (HMI). DESIGN OF ADVANCED INTERACTIVE DEVICES

- VOICE-BASED HMIS

- USABILITY. USER EXPERIENCE LABORATORY

- CALM COMPUTING

- SENTIMENT ANALYSIS

HEALTH

- MEDICAL IMAGING

- PATIENT MONITORING SOLUTIONS

- MOBILE HEALTH

- BIOMEDICAL SIGNALS PROCESSING

- GENOMICS

- INFORMATION MANAGEMENT SYSTEMS

- SYSTEMS FOR REHABILITATION AND THERAPY

MANUFACTURING

- INDUSTRIAL COMMUNICATIONS

- ARTIFICIAL INTELLIGENCE APPLIED TO PREDICTIVE MAINTENANCE

- INTELLIGENT MONITORING OF INDUSTRIAL PROCESSES

- DIGITAL CONTROL WITH MICROPROCESSORS AND DSP

- SENSOR SYSTEMS AND DATA EXTRACTION

- COMPUTER VISION FOR QUALITY CONTROL

- INDUSTRIAL & LOGISTICS PROCESSES OPTIMIZATION

ROBOTICS

- PERCEPTION SYSTEMS: VISION TO CONTROL AND GUIDE ROBOTS

- SPEECH SYNTHESIS AND AUTOMATIC LANGUAGE PROCESSING

- HEALTHCARE ROBOTICS

CIT UPC
Ed. Til·lers (planta 1)
C/Jordi Girona 31
08034 Barcelona - Spain
Tel. +34 93 405 44 03
info.cit@upc.edu

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www.cit.upc.edu