

# Bringing Intelligence to Embedded Systems

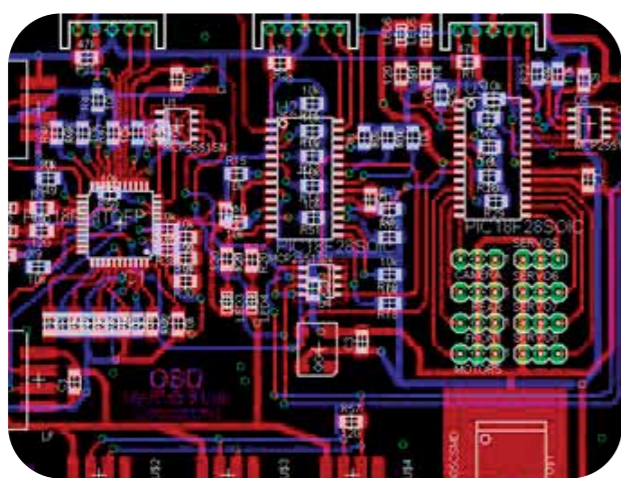
Intelligent Embedded Systems comprise an integral core within the technological advances in modern societies. These highly complex systems are ubiquitous in our everyday lives, and make up a wide range of products, including safety-critical systems. Composed of complex hardware and software, modern embedded systems operate within a significant number of constraints, the most important being real-time performance, reliable operation and low energy consumption.

The quest for low-power, reliable and high-performance embedded systems revolves around several challenges. Such challenges involve the development of state-of-the-art CAD algorithms for in-field and dynamic automatic testing, diagnosis and verification for large-scale VLSI Systems, Systems-on-Chip, and reusable embedded cores, fault-tolerance and reliability analysis for next generation systems, development of adaptive and self-healing chips, and integration of hardware artificial intelligence algorithms for monitoring, control and optimization of embedded Systems-on-Chip.

## Local and international collaborations:

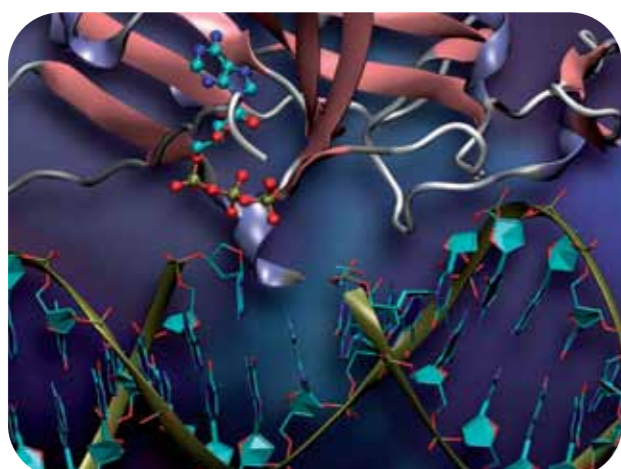
- Bristol University (UK)
- Universidad Politecnica de Madrid (SP)
- Politecnico di Torino (IT)
- Penn State University (USA)
- Technical University of Crete (GR)
- Technical University of Tallinn (EN)
- Telecommunications Systems Institute (GR)
- Cyprus University of Technology (CY)
- University of Nicosia (CY)
- Intel Corporation (USA)
- Signal Generix Ltd (CY)
- Algosystems (GR)
- Aldebaran Robotics (FR)

## Research Topics



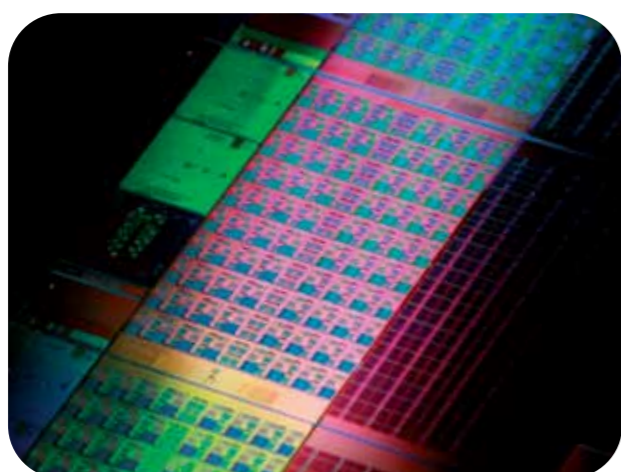
### System Management & Embedded Intelligence

- System-Level Runtime Optimization for Embedded systems
- System-Level Intelligent Resource Allocation for Energy-Constrained Critical Embedded Environments



### Intelligent Algorithms on Reconfigurable Hardware and ASiCs

- Acceleration of molecular biology and bioinformatics, medical image analysis, and modeling for biological and physiological systems, through the use of reconfigurable computer hardware



### CAD Tools & Methodologies for Manycore Systems

- Dynamic learning-based methods for design and test automation
- Distributed collaboration of embedded interconnected cores



### Computer Vision and Multimedia Hardware Architectures

- Image Enhancement, Segmentation & Transformations
- Object Classification & 3D Scene Reconstruction
- Novel hardware architectures for applications with hard deadlines and low-power constraints



### Embedded Systems Reliability, Testing & Diagnostics

- Learning-based Reliability Analysis and Evaluation
- Test Generation, on-line self-testing and diagnosis