Summer School Enabling Technologies for Industrial IoT

21 - 28 July 2021

More than *50h front-lessons, 6 ECTS*

All lessons will be held at the ground floor meeting room of the Dipartimento Ingegneria della Informazione (DII)

Via G. Caruso *16, 56122, Pisa, Italia*

https://www.dii.unipi.it/node/1485

Remote mode is also available: Microsoft TEAMS Virtual Room

Scientific Coordination: Prof. Sergio Saponara

Administrative Coordination: Dr. Erica Cacciotti, Dr. Rosanna Le Rose

Lectures from

University of Pisa, University of Kiel, University Grenoble Alpes, Carbon Dream

The exam will consist in completing a technical report, starting from one of the subject of the course and integrated with data and infos from student experience, assigned the last day of the course. The technical report should be completed within a pair of weeks after the course (and in any case within 1/09/2021), to have the exam registered with a final mark. The technical report will be analyzed by a committee involving Prof. Sergio Saponara, Prof. E. Mingozzi and Prof. G. Manara, which will act also as tutors.

For info: sergio.saponara@unipi.it, erica.cacciotti@unipi.it

L1, Wednesday 21 July, 9.00 – 18.30

Day on Integrated Circuits and Architectures for Industrial IoT Applications

9.00 - 10.30 Prof. S. Saponara, Prof. G. Manara
Introduction and syllabus of the Summer School (course, lessons, final exam, teaching material)

10.30 - 13.30 Prof. G. Iannaccone
RFID operating principles and basic circuit & system components

13.30 – 14.30 Break

14.30 - 18.30 Prof. S. Saponara
Integrated circuits and architectures for Industrial IoT applications: communication aspects

L2, Thursday 22 July, 9.00 – 18.30

Day on Basics of Electromagnetics and Sensing ICs

9.00 - 13.30 Prof. S. Saponara
Integrated circuits and architectures for Industrial IoT applications: remote sensing aspects

13.30 – 14.30 Break

14.30 - 16.30 Prof. L. Klinkenbusch

Electromagnetic propagation issues for IIoT

16.30 - 18.30 Prof. G. Manara
Advanced phased arrays for communications and wireless power transfer in industrial scenarios

L3, Friday 23 July, 9.00 – 18.30

Day on Networking for IoT and Industry 4.0

09.00 - 13.00 Prof. S. Giordano
Networking protocols and architectures for IIoT and Cyber Physical Systems

13.00 – 14.30 Break

14.30-18.30 Prof. E. Mingozzi
Web of Things: architectures, protocols and platforms for IoT applications

Saturday 24 July 19.30 ***Summer School Social Event (for people in presence mode)***

Pisa: not only IoT technology, but also arts "Giorgio De Chirico e la Pittura Metafisica"

Visit at Palazzo **Blu, Lungarno Gambacorti 9, 56125 Pisa** ***with a guide in English Language***

https://palazzoblu.it/mostra/giorgio-de-chirico-e-la-pittura-metafisica/

L4, Monday 26 July, 9.00 – 18.30

RFIDay(at)Summer School

09.00 - 10.00 Prof. P. Nepa
RFID technology for Industry 4.0: trends and issues

10.00 - 11.30 Prof. S. Tedjini
Chipless RFID technology

11.30 –13.00 Dr. A. Michel
Advanced antenna design for RFID devices

13.00 - 14.00 Break

14.00 - 15.30 Dr. F. Costa
RFID for Sensing

15.30 - 17.00 Prof. A. Buffi
Towards self-locating assets with RFID technology

17.00 - 18.30 Prof. S. Genovesi
Additive Manufacturing for chipless RFID tag and sensors

L5, Tuesday 27 July, 9.00 – 18.30

Day on Applications of 4.0 Paradigm to Smart Industry and Smart Transportation

9.00-11.00 Prof. C. Vallati
Integration of IoT devices into Cloud computing platforms: methods and practical examples

11.00-13.00 Prof. G. Anastasi
The 6TiSCH Architecture for Industrial IoT Applications

13.00 - 14.00 Break

14.00-15.00 CarbonDream industrial case study: dr. D. Benedetti, dr. J. Agnelli, Prof. S. Saponara

15.00-17.00 Prof. A. Monorchio
Electromagnetic Information Security for IoT devices

17.00 – 18.30 Prof. S. Saponara
New trends in the internet of autonomous vehicles

L6, Wednesday 28 July, 9.00 – 19.00

Day on High Performance Computing

9.00 – 11.30 Prof. S. Saponara
Embedded High Performance Computing: the H2020 European Processor Initiative

11.30 – 13.30 Prof. M. Macucci
Ultra low power circuits and quantum computing paradigms

13.30 – 14.30 Break

14.30 – 19.00 Prof. S. Saponara, Prof. G. Manara
Assignments of projects for the exam to each candidate