

## PhD in Emerging Digital Technologies

### Overview

The PhD in Emerging Digital Technologies is a 3-year programme which provides an exhaustive training path with structured teaching and supervised research activities.

The objective of the programme is to train a professional figure that is sought by both national and international, public and private research facilities and by companies manufacturing products or service providers, operating in the field of communication, information and perception technologies.

The PhD Programme is heavily interdisciplinary mixing Telecommunications, Information Engineering and Perceptual Robotics.

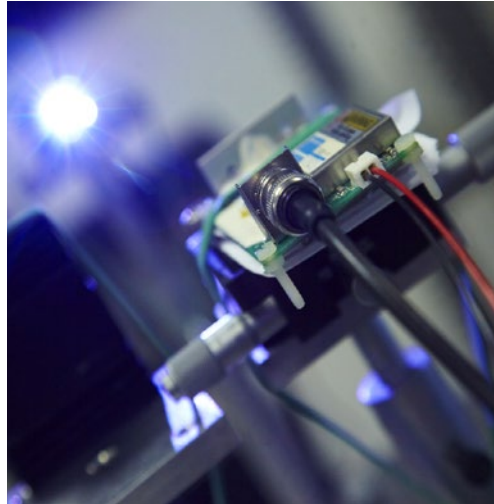
The PhD Programme collaborates with national and international, private and public research bodies. PhD students are required to undertake a compulsory minimum 6-month period abroad, in prestigious Universities or companies.

At the successful completion of the Programme, the School awards the student with the “PhD” (Philosophy Doctor) Degree.

### Areas of study and research facilities

The Programme is organised in 3 curricula.

**Photonic Technologies** focuses on photonic integrated circuits, sensors, photonic communications networks and microwave photonics for 5G/6G, photonics for radar and lidar with automotive and space applications, visible light communications, artificial intelligence applications in the telecommunication networks;



**Embedded Systems** focuses on real-time embedded software for safe and secure cyber-physical systems, hardware acceleration of deep neural networks, operating systems, cloud computing, hypervisors, software architectures for a predictable support of machine learning algorithms in safety-critical systems, as autonomous driving;

**Perceptual Robotics** focuses on human-robot interaction systems, telerobotics and virtual environments, intelligent automation systems and artificial intelligence, mechanical engineering and intelligent machine design, human-robot interaction and wearable robotics, virtual and augmented reality, haptics, rehabilitation robotics, control and automation engineering.

### Job Opportunities

Sample career opportunities for a graduated PhD EDT are:

- Researcher and project manager in the specialization fields;
- Project leader and unit manager for IT and ICT companies
- Designer of Industrial machines or ICT systems

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- System and software designer
- Domain expert in the field of applications and hardware software technologies
- Process and methodology manager for the development of software systems
- Head of development units in manufacturing companies of telecommunications devices.

### Highlights

The PhD EDT is characterized by both fundamental and applied research. After acquiring the necessary knowledge provided by the offered courses the PhD students perform their research in state of the art research facilities available at the TeCIP Institute (<https://www.santannapisa.it/en/institute/tecip/tecip-institute>). PhD students are offered the opportunities to actively participate in international (e.g., H2020) and national research projects (e.g., PRIN). The TeCIP Institutes counts 87 active projects.

Professors and researchers participating to the PhD EDT board and acting as supervisor and tutor are strictly collaborating with many top tier international universities, such as Universidad Carlos III de Madrid, University of California Santa Barbara, Osaka University, IIT Hyderabad, IIT Dharwad, University of California at Berkeley, University of Illinois at Urbana Champaign, ETH Zurich.

The TeCIP is part, together with the Biorobotics Institute, of the department of excellence Robotics and AI (<https://www.santannapisa.it/en/robotics-ai>).

### Info and contacts

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Scan the QR code: more detailed information on the Programme and the call for admission